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CR-119,994
OCTOBER 1972

—SPACE SHUTTLE—

**STATIC STABILITY AND
CONTROL INVESTIGATION
OF NR/GD DELTA WING
BOOSTER (B-20) AND
DELTA WING ORBITER (134D)**

VOLUME IV

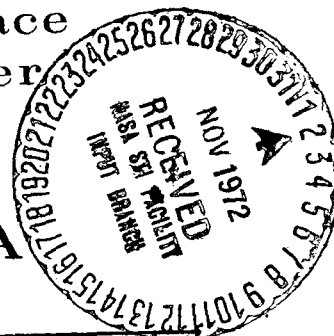
by

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**MSFC 14-INCH TRISONIC
WIND TUNNEL**

**Marshall Space
Flight Center**

N A S A



**SADSAC SPACE SHUTTLE
AEROTHERMODYNAMIC
DATA MANAGEMENT SYSTEM**

**CONTRACT NAS8-4016
MARSHALL SPACE FLIGHT CENTER**

This document should be
referenced as NASA CR-119,994

SPACE DIVISION  **CHRYSLER
CORPORATION**

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DMS-DR-1130
CR-119,994
VOLUME IV
OCTOBER, 1972

SADSAC/SPACE SHUTTLE

WIND TUNNEL TEST DATA REPORT

CONFIGURATION: Delta Wing Booster Alone (B-20) and With Delta Wing Orbiter
(134D), 0.0035 Scale Model

TEST PURPOSE: Static Stability and Control Investigation

TEST FACILITY: NASA/MSFC 14 x 14 Inch Trisonic Wind Tunnel

TESTING AGENCY: North American Rockwell

TEST NO. & DATE: MSFC TWT 490; 4/15/71 through 5/5/71

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PROJECT ENGINEER(S): Mr. E. C. Allen - NR

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ABSTRACT

Experimental aerodynamic investigations have been made on a .0035 scale model North American Rockwell/General Dynamics version of the space shuttle in the NASA/MSFC 14 x 14 Inch Trisonic Wind Tunnel. Static stability and control data were obtained on the delta wing booster alone (B-20) and with the delta wing orbiter (134D) mounted in various positions on the booster. Six component aerodynamic force and moment data were recorded over an angle of attack range from -10° to 24° at 0° and 6° sideslip angles and from -10° to $+10^{\circ}$ sideslip at 0° angle of attack. Mach number ranged from 0.6 to 4.96.

This document is the first of four volumes presenting the results of the MSFC TWT 490 test. The contents of each volume are indicated below:

- Volume I - Delta Wing Booster
- Volume II - Launch Configuration Piggyback Baseline
- Volume III - Launch Configurations Piggyback, Belly to Belly and Incidence Variations
- Volume IV - Launch Configurations Component Data
 Booster, Orbiter Build-up

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NOMENCLATURE

(General)

| <u>SYMBOL</u> | <u>SADSAC SYMBOL</u> | <u>DEFINITION</u> |
|---------------|--------------------------|---|
| α | ALPHA | angle of attack, angle between the projection of the wind X_w -axis on the body X, Z-plane and the body X-axis; degrees |
| β | BETA | sideslip angle, angle between the wind X_w -axis and the projection of this axis on the body X-Z-plane; degrees |
| ψ | PSI | yaw angle, angle of rotation about the body Z-axis, positive when the positive X-axis is rotated toward the positive Y-axis; degrees |
| ϕ | PHI | roll angle, angle of rotation about the body X-axis, positive when the positive Y-axis is rotated toward the positive Z-axis; degrees |
| ρ | | air density; K_g/m^3 , slugs/ft ³ |
| a | | speed of sound; m/sec, ft/sec |
| V | | speed of vehicle relative to surrounding atmosphere; m/sec, ft/sec |
| q | Q(PSI) Q(PSF) | dynamic pressure; $1/2\rho V^2$, psi, psf |
| M | MACH | Mach number; V/a |
| RN/L | RN/L | Reynolds number per unit length; million/ft |
| p | | static pressure; psi |
| P | | total pressure; psi |
| C_p | CP | pressure coefficient; $(p-p_\infty)/q$ |

NOMENCLATURE (Continued)

Reference & C. G. Definitions

| <u>SYMBOL</u> | <u>SADSAC SYMBOL</u> | <u>DEFINITION</u> |
|---------------|--------------------------|---|
| S | | wing area; m^2 , ft^2 |
| S | SREF | reference area; m^2 , ft^2 |
| \bar{c} | | wing mean aerodynamic chord or reference chord; m, ft, in (see l_{ref} or LREF) |
| l_{ref} | LREF | reference length; m, ft, in.; (see \bar{c}) |
| b_{ref} | BREF | wing span or reference span; m, ft, in |
| A_b | | base area; m^2 , ft^2 , in^2 |
| c. g. | | center of gravity |
| MRP | MRP | abbreviation for moment reference point |
| | XMRP | abbreviation for moment reference point on X-axis |
| | YMRP | abbreviation for moment reference point on Y-axis |
| | ZMRP | abbreviation for moment reference point on Z-axis |

NOMENCLATURE (Continued)

Axis System General

| <u>SYMBOL</u> | <u>DEFINITION</u> |
|---------------|-------------------|
| F | force; F, lbs |
| M | moment; M, in-lb |

| <u>Subscript</u> | <u>Definition</u> |
|------------------|----------------------------------|
| N | normal force |
| A | axial force |
| L | lift force |
| D | drag force |
| Y | force or moment about the Y axis |
| Z | moment about the Z axis |
| X | moment about the X axis |
| s | stability axis system |
| w | wind axis system |
| ref | reference conditions |
| ∞ | free stream conditions |
| t | total conditions |
| b | base |

NOMENCLATURE (Continued)
Body & Stability Axis System

| <u>SYMBOL</u> | <u>SADSAC SYMBOL</u> | <u>DEFINITION</u> |
|------------------------------------|--------------------------|--|
| <u>Body Axis System</u> | | |
| C_N | CN | normal force coefficient; F_N/qS |
| C_A | CA | axial force coefficient; F_A/qS |
| C_{A_b} | CAB | base axial force coefficient; $\left[\begin{smallmatrix} -1 \\ -1 \end{smallmatrix} \right] \left[(p_b - p_\infty)/q \right] (A_b/S)$ |
| C_{A_f} | CAF | forebody axial force coefficient; $C_A - C_{A_b}$ |
| C_n | CYN | yawing moment coefficient; $M_Z/qS b_{ref}$ |
| C_l | CBL | rolling moment coefficient; $M_X/qS b_{ref}$ |
| <u>Common to Both Axis Systems</u> | | |
| C_m | CLM | pitching moment coefficient; $M_Y/qS l_{ref}$ |
| C_y | CY | side force coefficient; F_Y/qS |
| <u>Stability Axis System</u> | | |
| C_L | CL | lift force coefficient; F_L/qS |
| C_D | CD | drag force coefficient; F_D/qS |
| C_{D_b} | CDB | base drag coefficient |
| C_{D_f} | CDF | forebody drag coefficient; $C_D - C_{D_b}$ |
| C_n | CLN | yawing moment coefficient; $M_{Z,s}/qS b_{ref}$ |
| C_l | CSL | rolling moment coefficient; $M_{X,s}/qS b_{ref}$ |
| L/D | L/D | lift-to-drag ratio; C_L/C_D |
| L/D_f | L/DF | lift to forebody drag ratio; C_L/C_{D_f} |

NOMENCLATURE (Continued)

Surface Definitions

| <u>SYMBOL</u> | <u>SADSAC SYMBOL</u> | <u>DEFINITION</u> |
|---------------|--------------------------|---|
| i_t | HORIZT | horizontal tail incidence; positive when trailing edge down; degrees |
| δ | | symmetrical surface deflection angle; degrees; positive deflections are: |
| | AILRON | aileron - total aileron deflection; (left aileron - right aileron)/2 |
| | CANARD | canard - trailing edge down |
| | ELEVON | elevon - trailing edge down |
| | ELEVTR | elevator - trailing edge down |
| | FLAP | flap - trailing edge down |
| | RUDDER | rudder - trailing edge to the left |
| | SPOILR | spoiler - trailing edge down |
| | TAB | tab - trailing edge down with respect to control surface |
| δ | | antisymmetrical surface deflection angle, degrees; positive trailing edge down: |
| | AIL-L | left aileron - trailing edge down |
| | AIL-R | right aileron - trailing edge down |
| | ELVN-L | left elevon - trailing edge down |
| | ELVN-R | right elevon - trailing edge down |
| | SPLR-L | left spoiler - trailing edge down |
| | SPLR-R | right spoiler - trailing edge down |

| <u>SURFACE SUBSCRIPTS</u> | <u>DEFINITION</u> |
|-------------------------------|-----------------------|
| a | aileron |
| b | base |
| c | canard |
| e | elevator or elevon |
| f | flap |
| r | rudder or ruddervator |
| s | spoiler |
| t | tail |

CONFIGURATIONS INVESTIGATED

The booster model was composed of the following components

B₂₀ - body (see Figure 8)

W₁₄ - wing (see Figure 9)

C_{4B} - canard (see Figure 10)

V₈ - vertical stabilizer (see Figure 11)

and was tested alone in the complete configuration as well as in a buildup mode. The orbiter model consisted of

B₅ - body (see Figure 12)

W₁₇ - wing (see Figure 13)

V₁₇ - vertical stabilizer (see Figure 14)

and was tested in a buildup mode on the complete booster and along with a booster buildup mode. It was also tested as a complete model at various mounting positions on the booster. The Dataset Collation Sheets give a complete summary of the configurations investigated. There were five orbiter mounting positions tested. For the piggy-back mode, where the orbiter was mounted on top of the booster, the baseline position had the orbiter nose ahead of the booster (position 1) as shown in Figures 1 and 6. There were two alternate positions tested in the piggyback mode and had the orbiter nose aligned with the booster nose (position 2, Figure 2 and 6) and the orbiter nose aft of the booster nose (position 3, Figure 3 and 6). Two belly-to-belly mounting positions were tested where the orbiter was slung under the booster in a belly-to-belly mode. The baseline position had the

CONFIGURATIONS INVESTIGATED
(Continued)

orbiter nose forward of the booster nose (position 4, Figures 4 and 6) and the alternate position had the orbiter nose well aft of the booster nose base to base (position 5, Figure 5 and 6).

Pertinent dimensional information on each of the model components tested is listed in the Model Component Description Sheets which follow the Dataset Collation Sheets.

TEST FACILITY DESCRIPTION

The Marshall Space Flight Center 14" x 14" Trisonic Wind Tunnel is an intermittent blowdown tunnel which operates by high pressure air flowing from storage to either vacuum or atmospheric conditions. A Mach number range from .2 to 5.85 is covered by utilizing two interchangeable test sections. The transonic section permits testing at Mach 0.20 through 2.50, and the supersonic section permits testing at Mach 2.74 through 5.85. Mach numbers between .2 and .9 are obtained by using a controllable diffuser. The range from .95 to 1.3 is achieved through the use of plenum suction and perforated walls. Mach numbers of 1.44, 1.93 and 2.50 are produced by interchangeable sets of fixed contour nozzle blocks. Above Mach 2.50 a set of fixed contour nozzle blocks are tilted and translated automatically to produce any desired Mach number in .25 increments.

Air is supplied to a 6000 cubic foot storage tank at approximately -40°F dew point and 500 psi. The compressor is a three-stage reciprocating unit driven by a 1500 hp motor.

The tunnel flow is established and controlled with a servo actuated gate valve. The controlled air flows through the valve diffuser into the stilling chamber and heat exchanger where the air temperature can be controlled from ambient to approximately 180°F . The air then passes through the test section which contains the nozzle blocks and test region.

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 20° ($\pm 10^{\circ}$). Sting offsets are available for obtaining various maximum angles of attack up to 25° .

DATA REDUCTION

The six aerodynamic forces and moments measured by the strain gauge balance were reduced to coefficient form in the body axis system utilizing the following reference dimensions:

$$S_{REF} = \text{booster wing planform area} = 15.656 \text{ in}^2$$

$$l_{REF} = \bar{c} = \text{booster wing mean aerodynamic chord} = 3.095 \text{ inches}$$

$$b_{REF} = \text{booster wing span} = 6.099 \text{ inches}$$

Moments are referenced, in all cases, about the booster nose which is booster fuselage station 0, water line 0, butt line 0.

For the launch configuration and booster alone tests, static pressures were measured at two locations on the booster base as shown in Figure 15. These pressures were utilized to correct the measured axial force coefficient to one which assumed free-stream static pressure at the base. The calculation of this base axial force correction was:

$$C_{A_b} = - \left[(p_{b_1} - p_{\infty})A_{b_1} + (p_{b_2} - p_{\infty})A_{b_2} \right] / q_{\infty} S_{REF}$$

$$\text{where } A_{b_1} = 0.418 \text{ in}^2$$

$$A_{b_2} = 0.634 \text{ in}^2$$

A further correction was made to the axial force for the pressure acting in

DATA REDUCTION
(Continued)

the balance cavity area. This force coefficient correction was determined by

$$C_{A_c} = - (p_c - p_\infty) A_c / q_\infty S_{REF}$$

where $A_c = 0.785 \text{ in}^2$

Therefore the final corrected axial force coefficient was:

$$C_{A_F} = C_A - (C_{A_b} + C_{A_c})$$

SADSAC calculation routines were utilized to obtain stability axis data; to determine the center of pressure location as a percent of body length (XCP/L); to calculate cross-derivative data ($C_{Y\beta}$, $C_{N\delta_e}$, $C_{Y\delta_a}$ etc.); and to determine incremental coefficients due to component addition or control surface deflection.

TABLE I
TEST CONDITIONS
TEST TWT-490

| MACH NUMBER | REYNOLDS NUMBER per unit length | DYNAMIC PRESSURE (pounds/sq. inch) | STAGNATION TEMPERATURE (degrees Fahrenheit) |
|-------------|------------------------------------|---------------------------------------|--|
| 0.6 | 6.5×10^6 | 5.58 | 97 |
| 0.9 | 6.9×10^6 | 7.96 | 95 |
| 1.0 | 6.7×10^6 | 8.33 | 98 |
| 1.1 | 6.7×10^6 | 8.73 | 96 |
| 1.2 | 6.6×10^6 | 8.98 | 97 |
| 1.46 | 6.6×10^6 | 9.56 | 99 |
| 1.96 | 8.9×10^6 | 12.80 | 96 |
| 2.99 | 4.4×10^6 | 4.95 | 98 |
| 4.96 | 6.1×10^6 | 3.40 | 99 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

BALANCE UTILIZED: TWT Model 200 Moment Balance

CAPACITY:

NF 175 lbs
SF 150 lbs
AF 100 lbs
PM 185 in. lbs
YM 160 in. lbs
RM 50 in. lbs

ACCURACY:

**COEFFICIENT
TOLERANCE:**

0.3%
0.3%
0.3%
0.3%
0.3%
0.3%

COMMENTS:

No satisfactory method is known for determining the absolute accuracy of the final data coefficients.

TEST TW-490 DATA SET COLLATION SHEET
Force- Booster, 0.0035-Scale, Stability and Control

☐ PRETEST
☒ POSTTEST

| DATA SET IDENTIFIER | CONFIGURATION | SCHD. | | CONTROL DEFLECTION | | NO. of RUNS | MACH NUMBERS | | | | | | | | | |
|---------------------|---------------|-------|---|--------------------|--|-------------|----------------------|------------|-----------------|------------|------------|------------|------|------|------|--|
| | | A | B | SE | | | 0.6 | 0.9 | 1.0 | 1.1 | 1.2 | 1.46 | 1.96 | 2.99 | 4.96 | |
| 0232 01A | B20 | A | O | | | 5 | 158/6159/6 | | 160/6 | | 213/6208/1 | | | | | |
| 02A | B20C4B | | | | | 5 | 140/6141/0 | | 142/6 | | 212/6206/6 | | | | | |
| 03A | B20C4Bw14 | | | O | | 7 | 110/6111/0 | 903/6 | 112/6 | 904/6 | 220/6164/6 | | | | | |
| 04A | B20w14 | | | | | 5 | 115/6114/6 | | 113/6 | | 218/6165/6 | | | | | |
| 05A | B20C4Bw14v8 | | | | | 9 | 001/6002/1003/6 | 004/1 | 005/6221/0 | 162/6 | 268/6267/6 | | | | | |
| 06A | | | | | | 7 | 010/6009/6008/6007/6 | | 004/6222/6163/6 | | | | | | | |
| 05B | | B | | | | 5 | | | | 218/1 | 278/6297/6 | 276/6275/6 | | | | |
| 58A | B20 | A | 6 | | | 5 | 334/6333/1 | | 332/6 | | 285/6290/6 | | | | | |
| 07A | B20C4Bw14v8 | | | | | 9 | 334/6330/6329/6328/6 | 327/6 | 279/6294/6 | 274/6273/6 | | | | | | |
| 05C | | O | C | | | 9 | 083/6084/6085/6086/6 | 087/6223/6 | 161/6264/6265/6 | | | | | | | |
| 57B | | B | O | | | 1 | | | | | | | | | | |

CLM. 7 13 19 25 31 37 43 49 55 61 67 7576
CN. 13 19 25 31 37 43 49 55 61 67 7576
KBL. 13 19 25 31 37 43 49 55 61 67 7576
KYN. 13 19 25 31 37 43 49 55 61 67 7576
CAF. 13 19 25 31 37 43 49 55 61 67 7576
CAB. 13 19 25 31 37 43 49 55 61 67 7576
CPB. 13 19 25 31 37 43 49 55 61 67 7576
CPC. 13 19 25 31 37 43 49 55 61 67 7576
CL. 13 19 25 31 37 43 49 55 61 67 7576
IDPVAR(1) IDPVAR(2) IDV

COEFFICIENTS:
A = -10 -8 -6 -4 -2 0 2 4 6 8 10
B = 6 8 10 12 14 16 18 20 22 24
C = -10 -8 -6 -4 -2 0 2 4 6 8 10

TEST TW-490 DATA SET COLLATION SHEET
Force-Booster + Orbiter, 0.0035-Scale, Launch Stability
and Control

☐ PRETEST
☒ POSTTEST

| DATA SET IDENTIFIER | CONFIGURATION | SCUD. | | CONTROL DEFLECTION | | NO. of RUNS | ORB. ATT. | | MACH NUMBERS | | | | | | | | | | |
|---------------------|----------------------|-------|---|--------------------|----|-------------|-----------------|-----------------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| | | α | β | SE | SC | | SE ₀ | SC ₀ | POS | i | 0.6 | 0.9 | 1.0 | 1.1 | 1.2 | 1.46 | 1.96 | 2.99 | 4.96 |
| R32 08A | B20+B5 | A | 0 | | | 5 | 1 | 0 | 157/6 | 156/6 | | 155/6 | | 214/6 | 201/6 | | | | |
| 09A | B20W14+B5 | | | 0 | | 5 | | | 134/6 | 135/6 | | 136/6 | | 219/6 | 200/6 | | | | |
| 10A | B20W14+B5W17 | | | | | 5 | | | 121/6 | 120/6 | | 119/6 | | 217/6 | 199/6 | | | | |
| 11A | B20C4Bw14+B5W17 | | | | | 5 | | | 122/6 | 123/6 | | 124/6 | | 231/6 | 197/6 | | | | |
| 12A | B20C4B+B5 | | | | | 5 | | | 139/6 | 138/6 | | 137/6 | | 210/6 | 205/6 | | | | |
| 13A | B20+B5W17 | | | | | 5 | | | 152/6 | 153/6 | | 154/6 | | 215/6 | 202/6 | | | | |
| 14A | B20+B5W17V17 | | | | | 5 | | | 151/6 | 150/6 | | 149/6 | | 216/6 | 203/6 | | | | |
| 15A | B20C4B+B5W17V17 | | | | | 5 | | | 146/6 | 147/6 | | 148/6 | | 209/6 | 204/6 | | | | |
| 16A | B20C4Bw14v8+B5V17 | | | 0 | | 5 | | | 127/6 | 126/6 | | 125/6 | | 232/6 | 198/6 | | | | |
| 17A | B20+B5 | | 6 | | | 5 | | | 340/6 | 339/6 | | 338/6 | | 287/6 | 288/6 | | | | |
| 18A | B20C4Bw14v8+B5W17 | | | 0 | | 5 | | | 323/6 | 322/6 | | 321/6 | | 284/6 | 291/6 | | | | |
| 19A | B20C4Bw14+B5W17V17 | | | | | 5 | | | 318/6 | 319/6 | | 320/6 | | 283/6 | 292/6 | | | | |
| 20A | B20+B5W17V17 | | | | | 5 | | | 335/6 | 336/6 | | 337/6 | | 286/6 | 289/6 | | | | |
| 21A | B20C4Bw14v8+B5W17V17 | | | 0 | | 9 | | | 317/6 | 316/6 | 315/6 | 314/6 | 313/6 | 281/6 | 294/6 | 272/6 | 271/6 | | |
| 22A | | | 0 | | | 9 | | | 025/6 | 024/6 | 027/6 | 028/6 | 029/6 | 235/6 | 177/6 | 260/6 | 259/6 | | |
| 23A | | | | | | 5 | | | 024/6 | 023/6 | | 022/6 | | 236/6 | 178/6 | | | | |
| 24A | | | | | | 5 | | | 019/6 | 020/6 | | 021/6 | | 237/6 | 179/6 | | | | |
| 25A | | | | | | 5 | | | 018/6 | 017/6 | | 016/6 | | 238/6 | 180/6 | | | | |
| 26A | | | | | | 8 | | | 011/6 | 012/6 | 013/6 | 014/6 | 015/6 | 239/6 | | 262/6 | 261/6 | | |
| 27A | | | | | | 5 | | | 032/6 | 031/6 | | 030/6 | | 240/6 | 182/6 | | | | |

COEFFICIENTS:
a or b

$\alpha A = -10.8, -6.4, -2.0, 2.4, 6.8, 10$

POS 1: P/G-BASE POS 4: C/G-BASE
2: P/G-N/N S: B/G-AFT
3: P/G-AFT

TEST TW-490 DATA SET COLLATION SHEET
Force - Booster + Orbiter, 0.0035-Scale, Launch Stability and Control

☐ PRETEST
☒ POSTTEST

| DATA SET IDENTIFIER | CONFIGURATION | SCHD. | | CONTROL DEFLECTION | | | | NO. OF RUNS | OEB. ATT. | | MACH NUMBERS | | | | | | | | |
|---------------------|--------------------|-------|---|--------------------------------------|-----|-----------------|------------------|-------------|-----------|---|--------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | α | R | SE | SC | SE ₀ | SE ₉₀ | | Pos | L | 0.6 | 0.9 | 1.0 | 1.1 | 1.2 | 1.46 | 1.96 | 2.99 | 4.96 |
| R32 28A | Ba04Bw4v8+BSw17v17 | A | O | O | O | -10 | O | 5 | 1 | O | 033/2 | 034/6 | | 035/6 | | 241/6 | 183/6 | | |
| 29A | | ↓ | ↓ | ↓ | ↓ | OFF | ↓ | 5 | | ↓ | 038/6 | 037/6 | | 036/6 | | 242/6 | 184/6 | | |
| 22B | | B | | ↓ | | O | | 1 | | | 299/6 | | | | | | | | |
| 23B | | | | -20 | | | | 1 | | | 300/6 | | | | | | | | |
| 24B | | | | -10 | | | | 1 | | | 301/6 | | | | | | | | |
| 25B | | | | 10 | | | | 1 | | | 302/6 | | | | | | | | |
| 26B | | | | +10 _L -10 _R | ↓ | | | 1 | | | 303/6 | | | | | | | | |
| 30B | | | | O | -15 | | | 1 | | | 304/6 | | | | | | | | |
| 31B | | ↓ | ↓ | | -30 | | | 1 | | | 305/6 | | | | | | | | |
| 22C | | O | C | | O | | | 9 | | | 046/6 | 045/6 | 044/6 | 043/6 | 042/6 | 043/6 | 186/6 | 244/6 | 243/6 |
| 32C | | -6 | ↓ | ↓ | | | | 9 | | | 308/6 | 309/6 | 310/6 | 311/6 | 312/6 | 282/6 | 293/6 | 272/6 | 269/6 |
| 33C | | O | | +10 _L -10 _R | | | ↓ | 5 | | | 047/6 | 048/6 | | 049/6 | | 246/6 | 187/6 | | |
| 34C | | | | O | | | -10 | 5 | | | 052/6 | 051/6 | | 050/6 | | 245/6 | 188/6 | | |
| 35C | | ↓ | ↓ | | | OFF | | 5 | | ↓ | 039/6 | 040/6 | | 041/6 | | 244/6 | 185/6 | | |
| 36A | | A | O | | | | O | 5 | | 2 | 053/6 | 054/6 | | 055/6 | | 247/6 | 176/6 | | |
| 37A | | ↓ | ↓ | | | | | 5 | | ↓ | 058/6 | 057/6 | | 056/6 | | 248/6 | 175/6 | | |
| 38A | | ↓ | ↓ | | | | | 5 | | 2 | 059/6 | 060/6 | | 061/6 | | 249/6 | 191/6 | | |
| 38C | | O | C | | | | | 5 | | ↓ | 070/6 | 069/6 | | 068/6 | | 252/6 | 192/6 | | |
| 39A | | A | O | | | | | 5 | | 2 | 064/6 | 063/6 | | 062/6 | | 250/6 | 190/6 | | |
| 40A | | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 5 | | 4 | 065/6 | 066/6 | | 067/6 | | 251/6 | 189/6 | | |

COEFFICIENTS:

a or b SCHEDULES

CLM 7 13 19 25 31 37 43 49 55 61 67 7576
CN 138L KYN CAF LAB KPB1 CPC KL
CA = -10-3-6-4-2-0-2-4-6-8-10
CB = 6-8-10-12-14-16-18-20-22-24
CC = -10-8-6-4-2-0-2-4-6-8-10
Pos 1: P/B-BASE Pos 4: B/B-BASE
2: P/B-N/A 5: B/B-AFT
3: P/B-AFT

TEST TW-490 DATA SET COLLATION SHEET
 Force-Booster + Orbiter, 0.0035-Scale, Launch Stability
 and Control

☐ PRETEST
☒ POSTTEST

| DATA SET IDENTIFIER | CONFIGURATION | SCHD. | | CONTROL DEFLECTION | | | | NO. of RUNS | OEB. ATT. | | MACH NUMBERS | | | | | | | | |
|---------------------|-----------------------|-------|---|--------------------|----|-----|-----|-------------|-----------|---|--------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | u | R | SE | SC | SE0 | SE2 | | POS | i | 0.6 | 0.9 | 1.0 | 1.1 | 1.2 | 1.46 | 1.96 | 2.99 | 4.96 |
| 232 41A | B20C4Bw14v8t B5w17v17 | A | O | O | O | O | O | 5 | 3 | O | 076/0 | 075/0 | | 074/0 | | 254/0 | 194/0 | | |
| 42C | | O | C | | | | | 5 | | ↓ | 071/0 | 072/0 | | 073/0 | | 253/0 | 193/0 | | |
| 43A | | A | O | | | | | 5 | | 2 | 077/0 | 078/0 | | 079/0 | | 255/0 | 195/0 | | |
| 44A | ↓ | | | | ↓ | ↓ | ↓ | 5 | ↓ | 4 | 082/0 | 081/0 | | 089/0 | | 256/0 | 196/0 | | |
| 45A | B20w14 + B5 | | | | | | | 5 | 4 | O | 133/0 | 132/0 | | 131/0 | | 229/0 | 157/0 | | |
| 46A | B20w14 + B5w17 | | | | | O | | 5 | | | 116/0 | 117/0 | | 118/0 | | 230/0 | 166/0 | | |
| 47A | B20C4Bw14 + B5 | | | | O | | | 5 | | | 128/0 | 129/0 | | 130/0 | | 228/0 | 168/0 | | |
| 48A | B20C4Bw14+B5w17v17 | | | ↓ | | O | O | 5 | | | 109/0 | 108/0 | | 107/0 | | 217/0 | 169/0 | | |
| 49A | B20C4B + B5 | | | | | | | 5 | | | 145/0 | 144/0 | | 143/0 | | 211/0 | 207/0 | | |
| 50A | B20C4Bw14v8+B5w17v17 | | | O | | O | O | 9 | | | 097/0 | 096/0 | 095/0 | 094/0 | 093/0 | 225/0 | 170/0 | 258/0 | 257/0 |
| 51A | | ↓ | | 10 | | | | 5 | | | 098/0 | 099/0 | | 100/0 | | 226/0 | 171/0 | | |
| 51B | | B | | ↓ | | | | 1 | | | 307/0 | | | | | | | | |
| 50B | | ↓ | ↓ | O | | | | 1 | | | 306/0 | | | | | | | | |
| 50C | | O | C | | | | | 7 | | ↓ | 088/0 | 089/0 | 090/0 | 091/0 | 092/0 | 224/0 | 172/0 | | |
| 52A | | A | O | ↓ | | | | 5 | | 2 | 103/0 | 102/0 | | 101/0 | | 233/0 | 174/0 | | |
| 53A | | | | 10 | | | | 2 | | ↓ | 902/0 | | | 901/0 | | | | | |
| 54A | | | ↓ | O | | | | 5 | | O | 104/0 | 105/0 | | 106/0 | | 234/0 | 173/0 | | |
| 55A | | | G | ↓ | | | | 5 | | ↓ | 331/0 | 325/0 | | 326/0 | | 289/0 | 295/0 | | |
| 56A | ↓ | O | | -10C +10R | ↓ | ↓ | ↓ | 1 | | ↓ | | | | | | | 181/0 | | |

COEFFICIENTS:
 a or b
 SCHEDULES
 CA = -b - 8 - 6 - 4 - 2, 0, 2, 4, 6, 8, 10
 CB = 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26
 CC = -10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10
 POS 1: P/G-BASE POS 4: B/G-CASE
 S: P/G-AFT

TABLE III

MODEL COMPONENT: BODY - B₂₀GENERAL DESCRIPTION: Body for B-15B Delta Wing Configuration, extended
10% over basic (B₁₉) bodyDRAWING NUMBER:WT-70-105222DIMENSIONS:FULL-SCALEMODEL SCALE

AS BUILT

Length (nose to wing T. E.)

10.689

Max. Width

1.356

Max. Depth

1.587

Fineness Ratio

6.73

Area

Max. Cross-Sectional

2.252

Planform

13.809

Wetted

Base

1.840

TABLE III (CONCLUDED)

MODEL COMPONENT: Wing W14

GENERAL DESCRIPTION: W10 modified to unswept trailing edge and with twist
outboard of B. L. 340 linearly increasing to -4 degrees at tip and with leading
edge faired into fuselage (W10 is the basic B-15B wing)

DRAWING NUMBER: WT-7-105222

| <u>DIMENSIONS:</u> | <u>FULL-SCALE</u> | <u>MODEL SCALE</u> |
|----------------------------|-------------------|--------------------|
| <u>TOTAL DATA</u> | | <u>AS BUILT</u> |
| Area | | |
| Planform | | 15.656 |
| Wetted | | |
| Span (equivalent) | | 6.099 |
| Aspect Ratio | | 2.38 |
| Rate of Taper | | |
| Taper Ratio | | 0.1192 |
| Diehedral Angle, degrees | | 3 at T.E. |
| Incidence Angle, degrees | | 2 |
| Aerodynamic Twist, degrees | | -4 |
| Toe-In Angle | | |
| Cant Angle | | |
| Sweep Back Angles, degrees | | |
| Leading Edge | | 53 |
| Trailing Edge | | 0 |
| 0.25 Element Line | | 44.85 |
| Chords: | | |
| Root (Wing Sta. 0.0) | | 4.587 |
| Tip, (equivalent) | | 0.547 |
| MAC | | 3.095 |
| Fus. Sta. of .25 MAC | | 10.193* |
| W.P. of .25 MAC | | 0.766 |
| B.L. of .25 MAC | | 1.126 |
| Airfoil Section | | |
| Root | | NACA-0010-64 (mod) |
| Tip | | NACA-0010-64 (mod) |
| <u>EXPOSED DATA</u> | | |
| Area | | 10.03 |
| Span, (equivalent) | | 4.743 |
| Aspect Ratio | | 2.24 |
| Taper Ratio | | 0.1485 |
| Chords | | |
| Root | | 3.684 |
| Tip | | 0.547 |
| MAC | | 2.504 |
| Fus. Sta. of .25 MAC | | 11.356 |
| W.P. of .25 MAC | | 0.776 |
| B.L. of .25 MAC | | 1.572 |

*Fuselage stations are relative to an origin 3.500 inches ahead of the nose of B19

TABLE III (CONTINUED)

MODEL COMPONENT: Canard C_L

GENERAL DESCRIPTION: Basic canard for B-15B Delta Wing Configuration

DRAWING NUMBER:

WT-70-105224

DIMENSIONS:

FULL-SCALE

MODEL SCALE
AS BUILT

Area (exposed)

0.706

Span (equivalent)

2.576

Inb'd equivalent chord

1.061

Outb'd equivalent chord

0.099

Ratio movable surface chord/
total surface chord

At Inb'd equiv. chord

At Outb'd equiv. chord

Sweep Back Angles, degrees

Leading Edge

57.68

Tailing Edge

0

Hingeline

Area Moment (Normal to hinge line)

Hinge line located at 25% of M.A.C. of exposed area

TABLE III (CONTINUED)

MODEL COMPONENT: Vertical Tail V8

GENERAL DESCRIPTION: Alternate vertical tail with NACA 0012-64 (MOD) airfoil
section.

DRAWING NUMBER: WT-71-105803 Sheet 1, Chg. Ltr. C

| <u>DIMENSIONS:</u> | <u>FULL-SCALE</u> | <u>MODEL SCALE (with cut-out</u> |
|---|-------------------|---|
| Area | | as built <u>2.326 in²</u> |
| Span (equivalent) | | <u>2.007 in</u> |
| Inb'd equivalent chord | | <u>1.723 in</u> |
| Outb'd equivalent chord | | <u>0.656 in</u> |
| Ratio Elevator chord/horizontal tail chord | | |
| At Inb'd equiv. chord | | <u>.35</u> |
| At Outb'd equiv. chord | | <u>.35</u> |
| Sweep Back Angles, degrees | | |
| Leading Edge | | <u>35.0 Deg</u> |
| Tailing Edge | | <u>10.0 Deg</u> |
| Hingeline | | <u>20.0 Deg</u> |
| Area Moment (Normal to hinge line) | | |

TABLE III (CONTINUED)

MODEL COMPONENT: BODY - B5

GENERAL DESCRIPTION: 9992-134B body. Delta wing orbiter body including a canopy on the upper surface aft of the nose. The model scale factor is 0.0035

DRAWING NUMBER: Lines Dwg. 9992-134B

| <u>DIMENSIONS:</u> | <u>FULL-SCALE</u> | <u>MODEL SCALE</u> |
|---|-------------------|--------------------|
| Length, in. | <u>2120.00</u> | <u>7.420</u> |
| Max. Width, in. | <u>462.86</u> | <u>1.620</u> |
| Max. Depth, in. | <u>274.29</u> | <u>0.960</u> |
| Fineness Ratio | <u>5.906</u> | <u>5.906</u> |
| Area | | |
| Max. Cross-Sectional, ft ² (Fus. Sta. 1215.0 to 1809.0 in.) | <u>702.75</u> | <u>0.00860</u> |
| Planform | <u>-</u> | <u>-</u> |
| Wetted | <u>-</u> | <u>-</u> |
| Base | <u>-</u> | <u>-</u> |

TABLE III (CONTINUED)

MODEL COMPONENT: Wing-W17GENERAL DESCRIPTION: Delta wing with -5° twist and rounded wing tips. Wing blends into body. Follows NR lines drawing 9992-134D.Model Scale = 0.0035DRAWING NUMBER: 8-865-13, - 14, - 55 thru - 60

DIMENSIONS: FULL-SCALE MODEL SCALE

TOTAL DATA

| | | |
|--|--------------|---------|
| Area, ft ² | | |
| Planform | 6026.60 | 0.07383 |
| Wetted | | |
| Span (equivalent), in. | 1286.28 | 4.502 |
| Aspect Ratio | 1.892 | 1.892 |
| Rate of Taper | 1.723 | 1.723 |
| Taper Ratio | 0.094 | 0.094 |
| Dihedral Angle, degrees | 7.0 | 7.0 |
| Incidence Angle, degrees | 0.0 | 0.0 |
| Aerodynamic Twist, degrees (about T.E) | -5.0 | -5.0 |
| Toe-In Angle | - | - |
| Cant Angle | - | - |
| Sweep Back Angles, degrees | | |
| Leading Edge | 60.056 | 60.056 |
| Trailing Edge | 0.000 | 0.000 |
| 0.25 Element Line | 52.473 | 52.473 |
| Chords: in. | | |
| Root (Hing Sta. 0.0) | 1232.91 | 4.315 |
| Tip, (equivalent) (W.S. 647.97) | 116.45 | 0.408 |
| MAC (W.S. 234.63) | 828.64 | 2.900 |
| Fus. Sta. of .25 MAC | 1498.52 | 5.245 |
| W.P. of .25 MAC | 46.27 | 0.162 |
| B.L. of .25 MAC | 232.88 | 0.815 |
| Airfoil Section | | |
| Root (W.S. 241.80) | NACA 0009-64 | |
| Tip (W.S. 546.07) | NACA 0012-64 | |

EXPOSED DATA

| | | |
|------------------------------|---------|---------|
| Area, ft ² | 2658.68 | 0.03257 |
| Span, (equivalent) in. | 814.61 | 2.851 |
| Aspect Ratio | 1.720 | 1.720 |
| Taper Ratio | 0.141 | 0.141 |
| Chords: in. | | |
| Root, (Equiv.) (W.S. 237.61) | 823.51 | 2.882 |
| Tip, (Equiv.) (W.S. 647.97) | 116.45 | 0.408 |
| MAC (W.S. 391.34) | 558.63 | 1.955 |
| Fus. Sta. of .25 MAC | 1701.03 | 5.954 |
| W.P. of .25 MAC | 65.37 | 0.229 |
| B.L. of .25 MAC | 388.43 | 1.359 |

LEADING EDGE CUFF

| | | |
|---|---------|---------|
| Planform area, ft ² | 46.13 | 0.00057 |
| Leading edge intersects Fus. M.L. @ Sta., in. | 1182.86 | 4.180 |
| Leading edge intersects wing L.E. @ Sta., in. | 1425.73 | 4.000 |

TABLE III (CONTINUED)

NA-70-435
10-9-70
Page 39
11-6-70 Revision

MODEL COMPONENT: Vertical Stabilizer - V₁₇

GENERAL DESCRIPTION: Centerline vertical stabilizer with the 5° (half angle) wedge trailing edge. Used with delta wing orbiter body B₅ (configuration 9992-1343).

The model scale factor is 0.0035.

DRAWING NUMBER: 8-867-47, -50

DIMENSIONS: FULL-SCALE MODEL SCALE

TOTAL DATA

| | | |
|--|---------|---------|
| Area | | |
| Planform, ft ² | 667.76 | 0.00818 |
| Theoretical Span, in. | 380.421 | |
| Span (equivalent), in. | 377.52 | 1.321 |
| Aspect Ratio | 1.482 | 1.482 |
| Rate of Taper | 0.718 | 0.718 |
| Taper Ratio | 0.305 | 0.305 |
| Dihedral Angle, degrees | - | - |
| Incidence Angle, degrees | - | - |
| Aerodynamic Twist, degrees | - | - |
| Toe-In Angle, degrees | 0.0 | 0.0 |
| Cant Angle, degrees | 0.0 | 0.0 |
| Sweep Back Angles, degrees | | |
| Leading Edge | 45.0 | 45.0 |
| Trailing Edge | 15.734 | 15.734 |
| 0.25 Element Line | 39.367 | 39.367 |
| Chords: Theoretical Tip, in. | 117.053 | |
| Root W.P. 274.29, in. | 390.29 | 1.366 |
| Tip, (equivalent), (W.P. 646.90 in), in. | 119.13 | 0.417 |
| MAC (W.P. 428.19 in.), in. | 278.76 | 0.976 |
| Fus. Sta. of .25 MAC, in. | 2034.10 | 7.119 |
| W.P. of .25 MAC, in. | 429.55 | 1.503 |
| B.L. of .25 MAC, in. | 0.0 | 0.0 |
| Airfoil Section, Wedge shape with L.E.R. and flat T.E. | | |
| L.E. Radius, in. (1.6% chord) | 6.29 | 0.022 |

EXPOSED DATA

| | | |
|----------------------|--|--|
| Area | | |
| Span, (equivalent) | | |
| Aspect Ratio | | |
| Taper Ratio | | |
| Chords | | |
| Root | | |
| Tip | | |
| MAC | | |
| Fus. Sta. of .25 MAC | | |
| W.P. of .25 MAC | | |
| B.L. of .25 MAC | | |

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TABLE V. (CONTINUED)

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|--|-------------------------------------|-------|
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|--|--------------------------|-------|
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PLOTTED COEFFICIENTS SCHEDULE:

- (A) CN, CAF, CIM, XCP/L, CAB, (C) DCIM, DCN, DCAF vs. α
 CIMALP, CNALPH vs. α (D) DCY, DCBL, DCYN vs. α
- (B) CIMALP ($\alpha = 0$), CNALPH ($\alpha = 0$),
 CN ($\alpha = 0$), CIM ($\alpha = 0$), CAF ($\alpha = 0$) vs. Mach

MODEL FIGURES

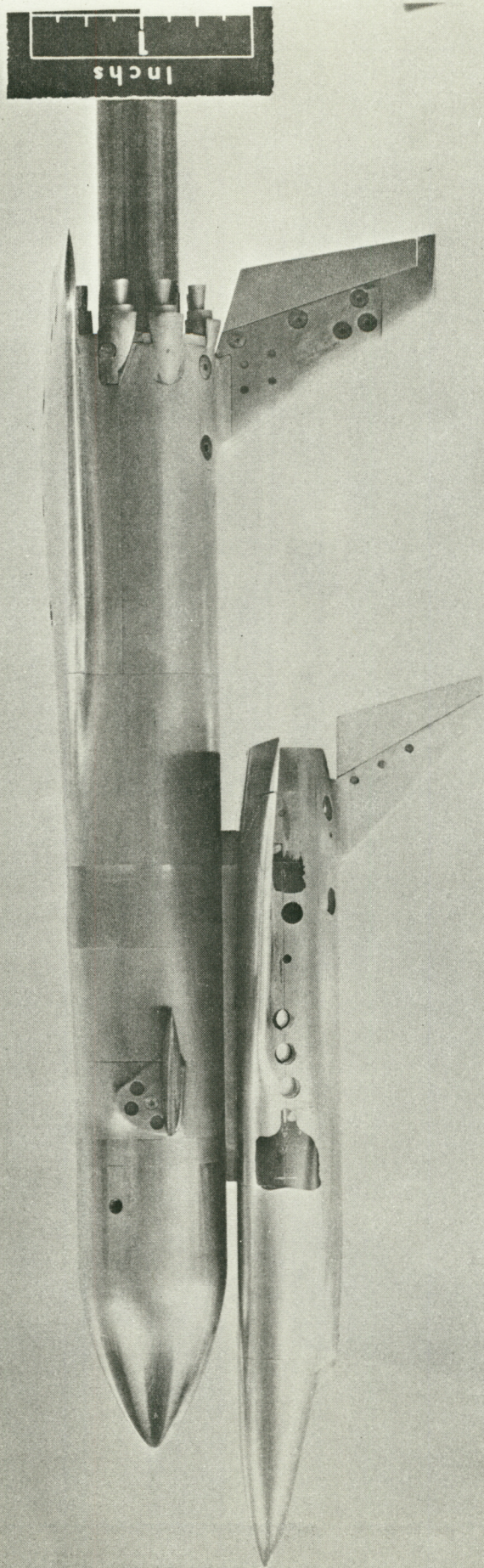


Figure 1. Photograph of Launch Configuration, Orbiter in Position 1 (Baseline - Piggyback)

Inches

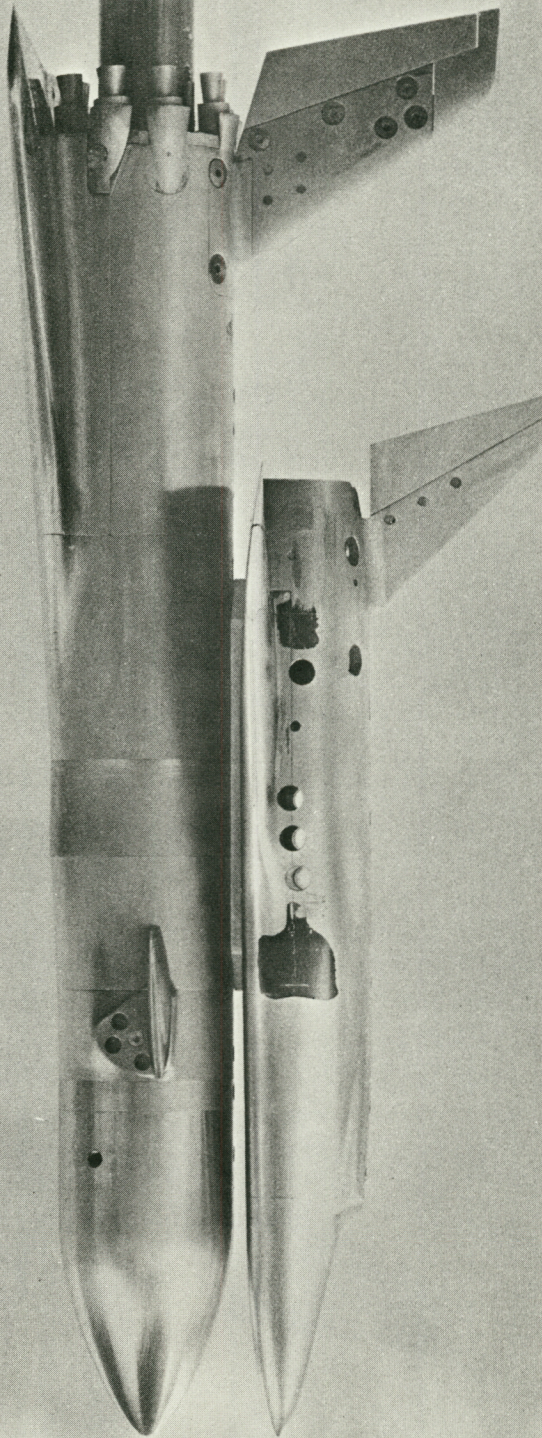


Figure 2. Photograph of Launch Configuration, Orbiter in Position 2

Inches

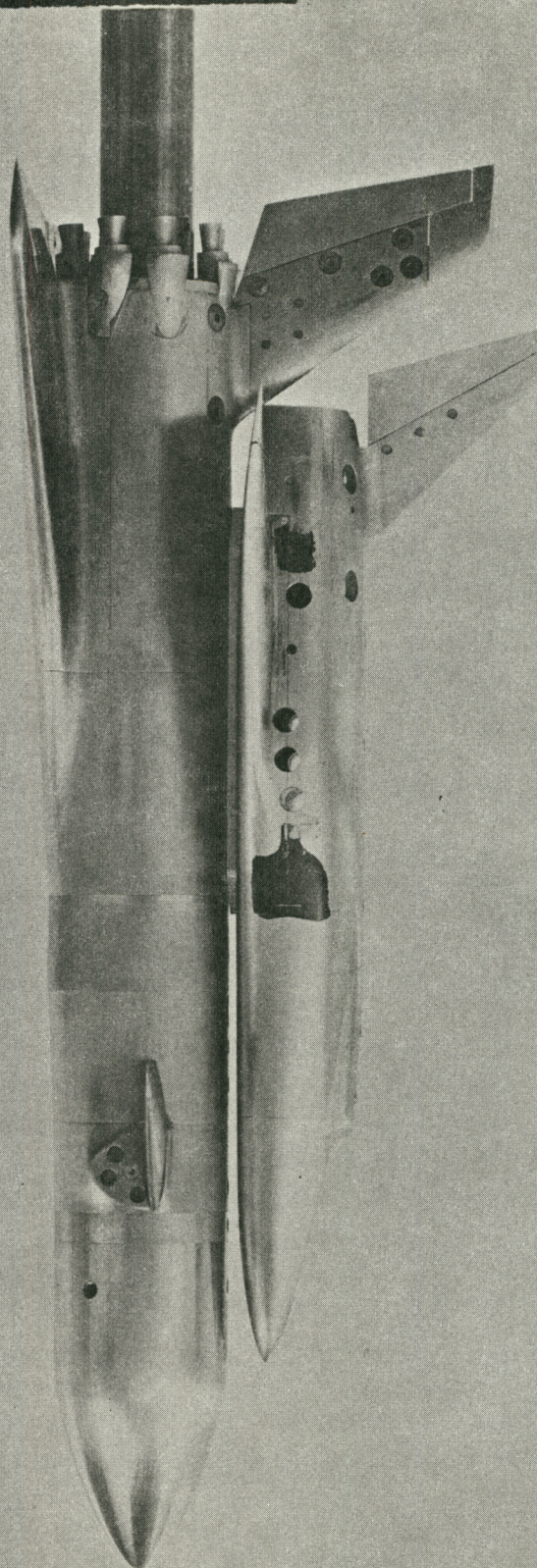


Figure 3. Photograph of Launch Configuration, Orbiter in Position 3

Figure 4. Photograph of Launch Configuration, Orbiter in Position 4 (Baseline - Belly-to-Belly)

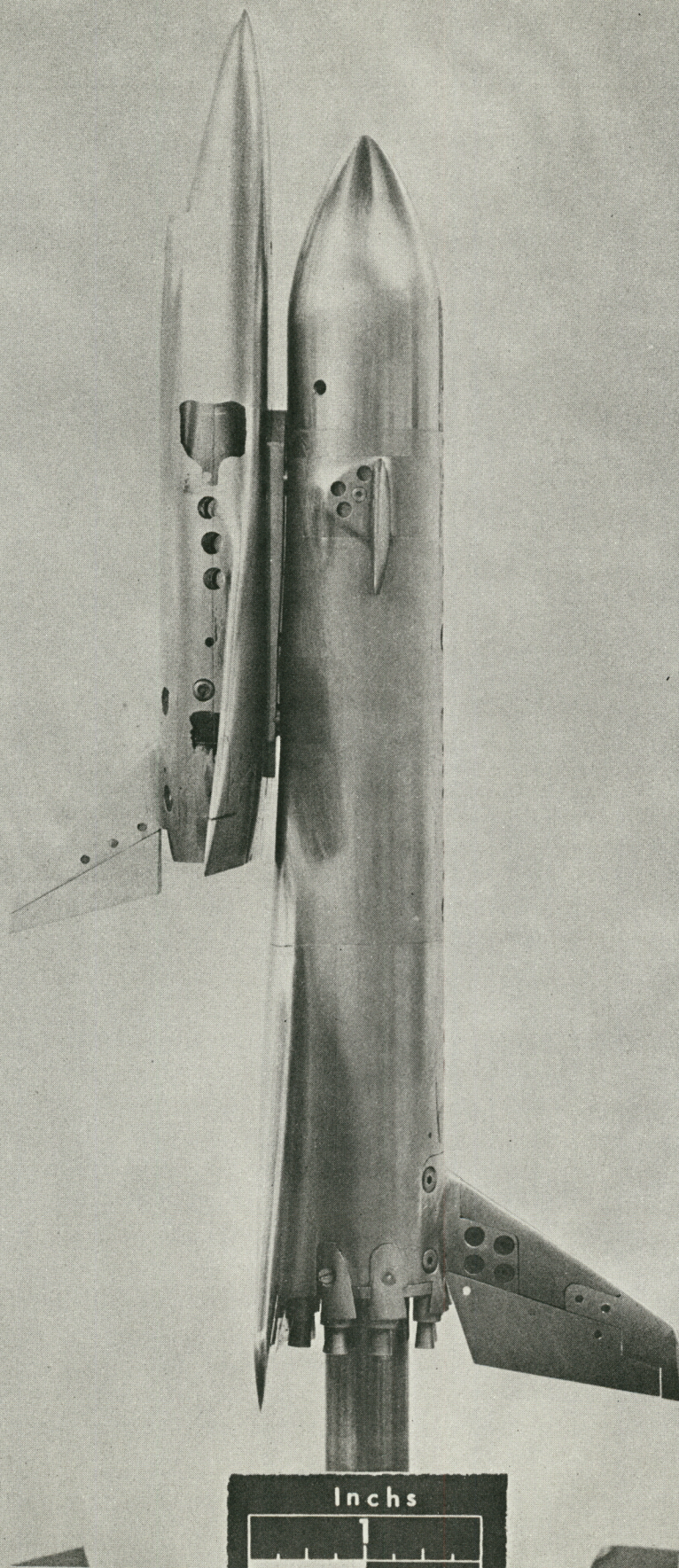
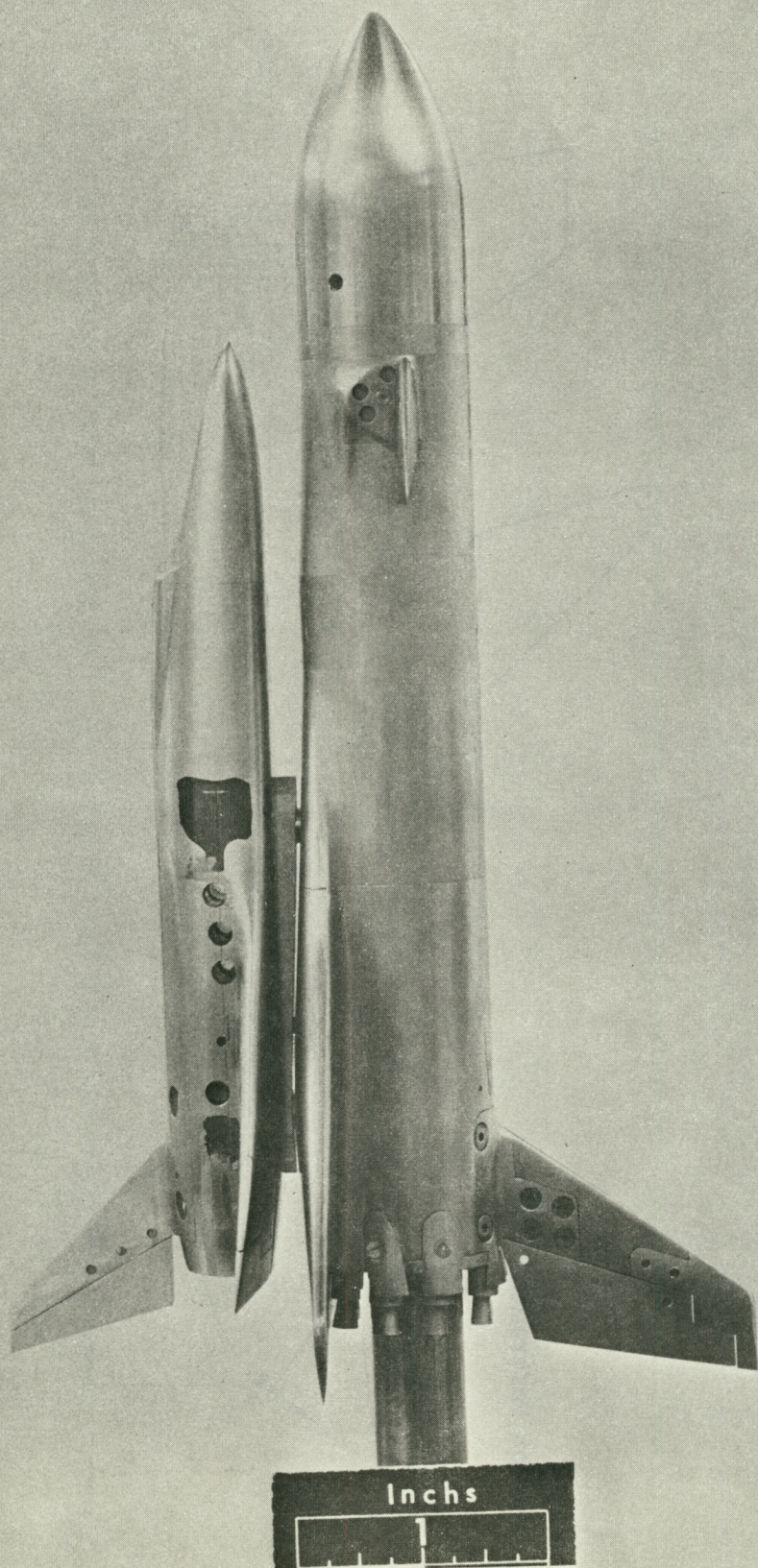


Figure 5. Photograph of Launch Configuration, Orbiter in Position 5



SSV LAUNCH CONFIGURATION

P163Y Back .. Baseline
(Position 1)

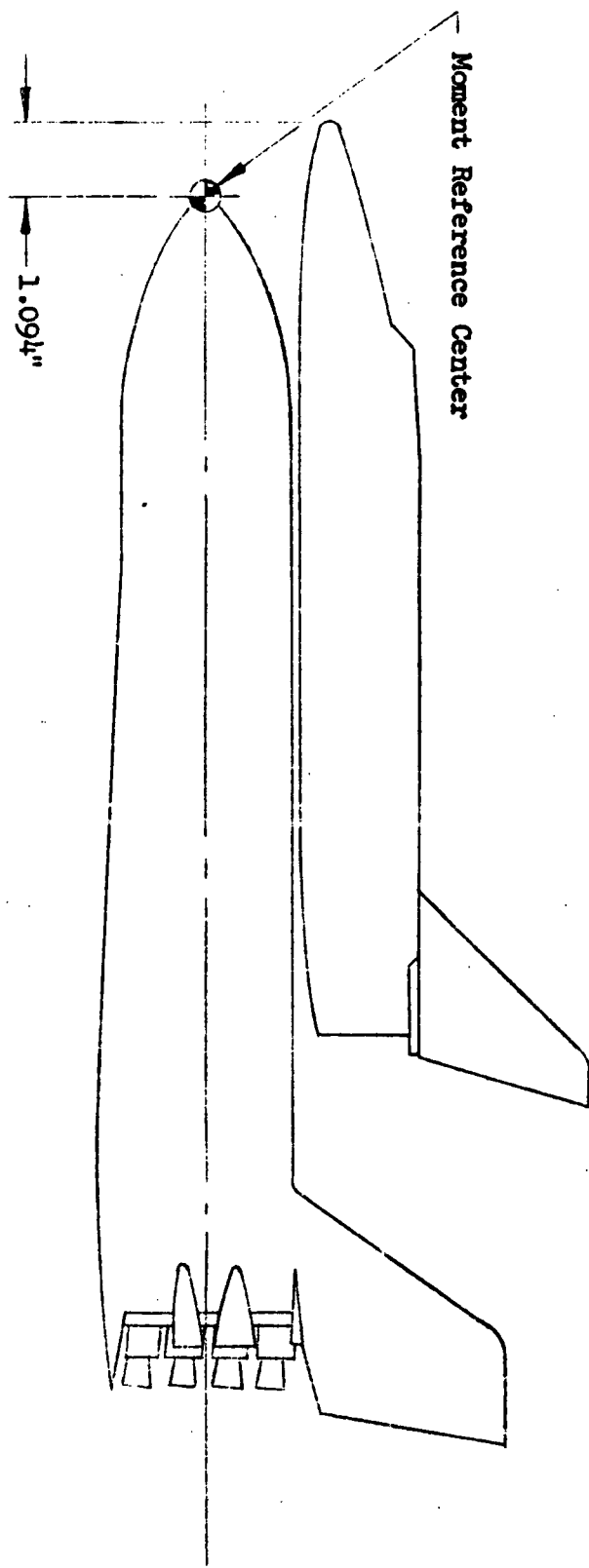


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS

SSV LAUNCH CONFIGURATION

PLGKY Back - Nose To Nose
(Position 2)

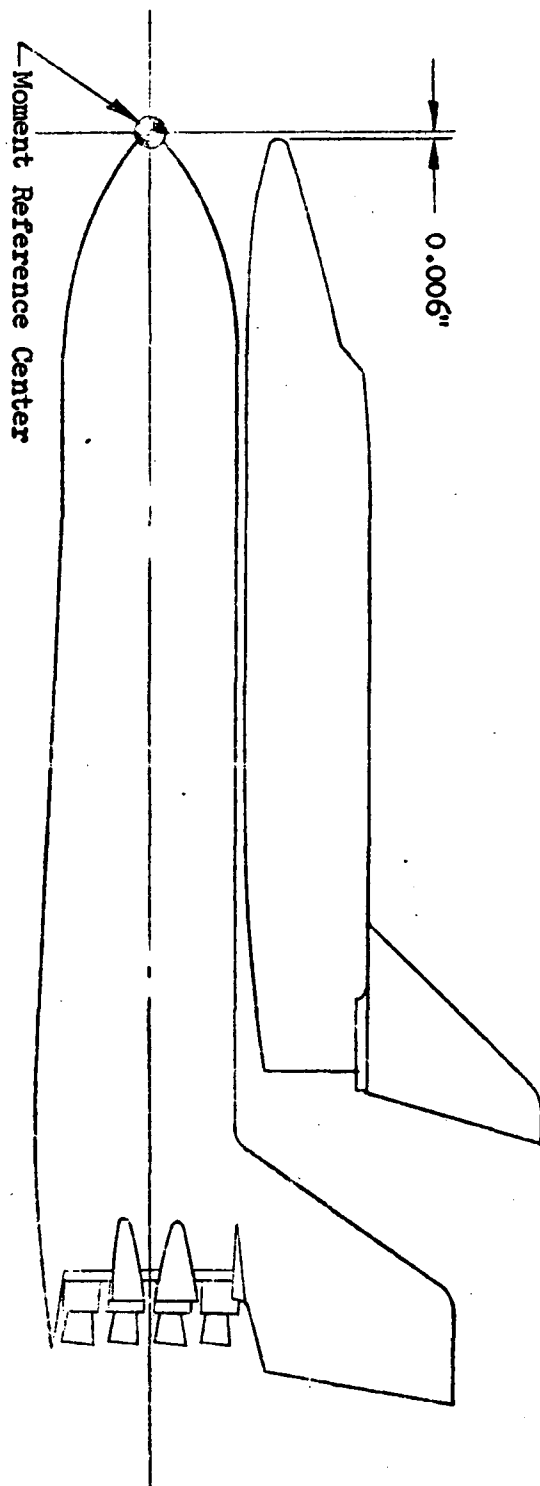


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

SSV LAUNCH CONFIGURATION

Piggy Back - Orbiter Aft
(Position 3)

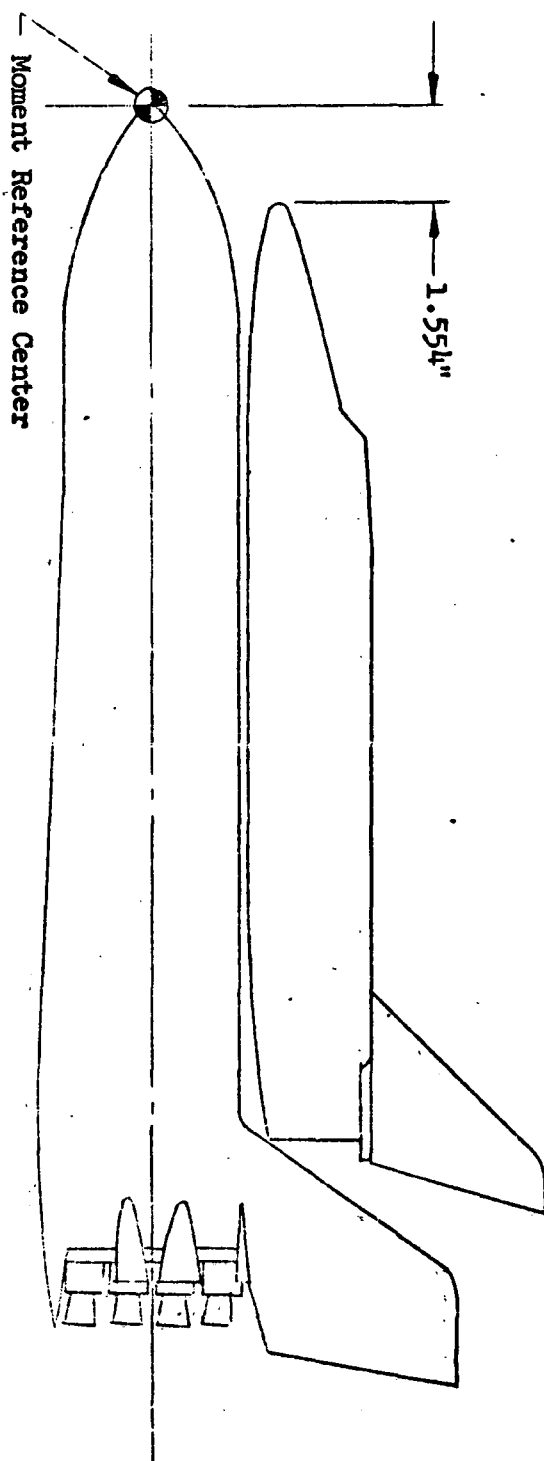


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

SSV LAUNCH CONFIGURATION

Belly To Belly - Baseline
(Position 4)

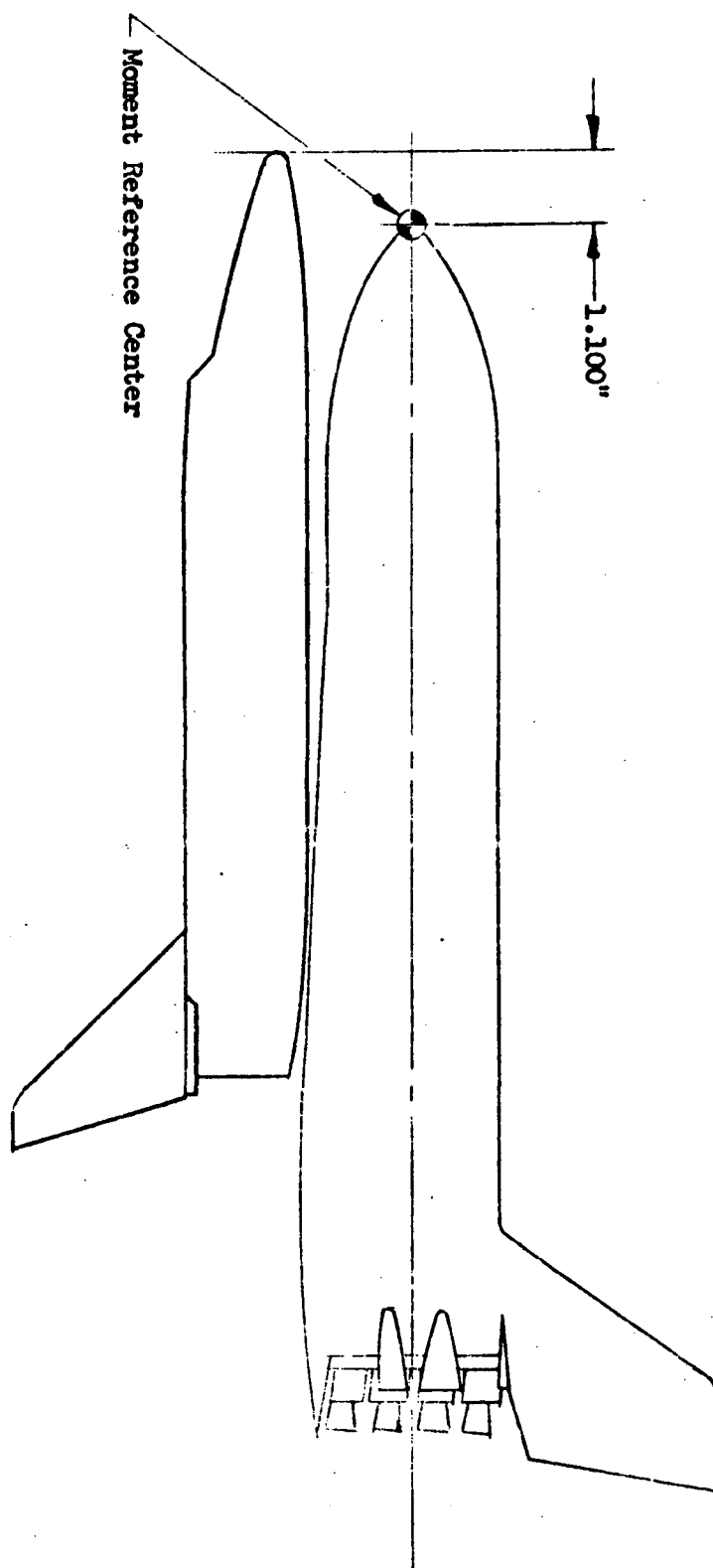


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

SSV LAUNCH CONFIGURATION

Belly To Belly - Art
(Position 5)

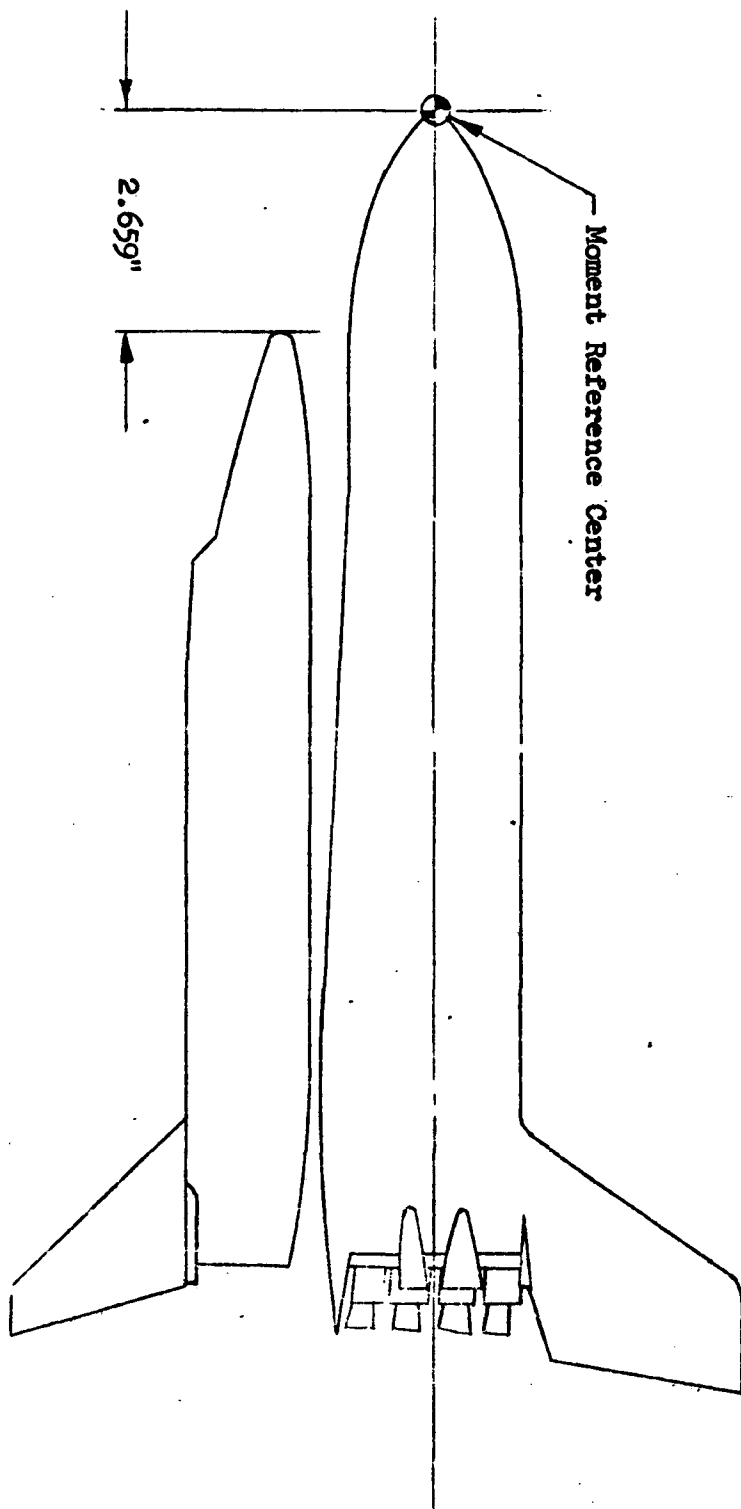


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

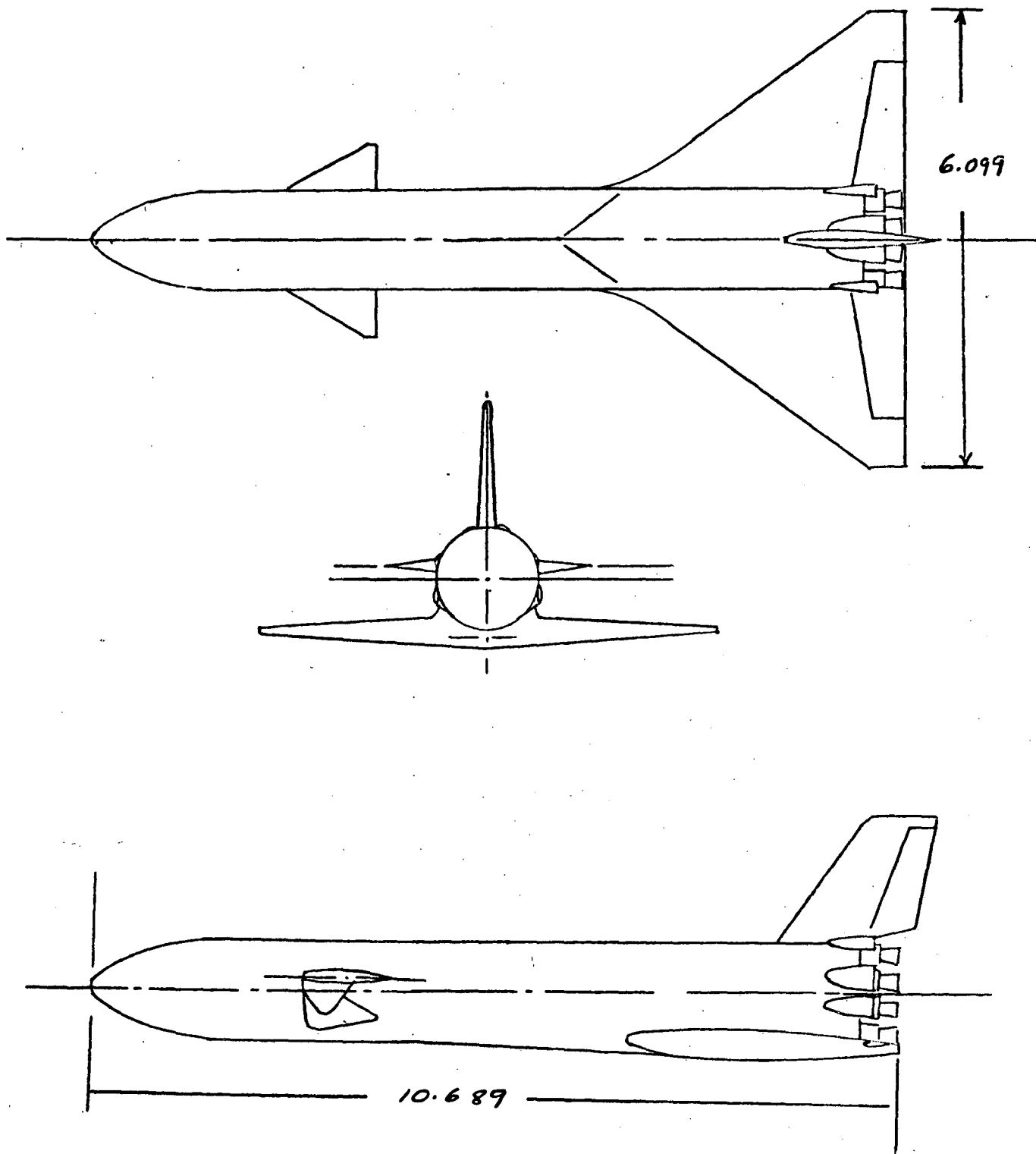
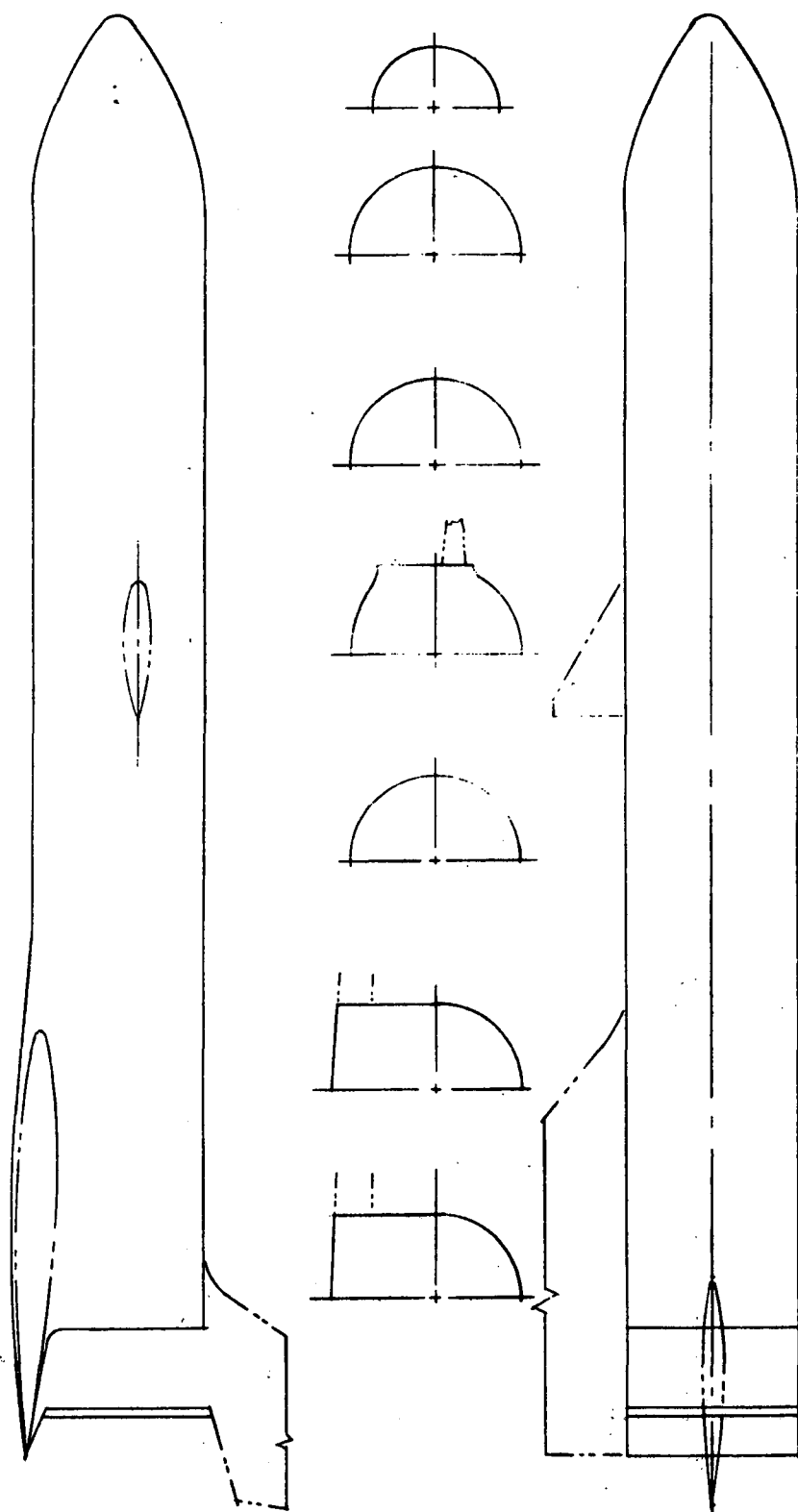


FIGURE 7. THREE-VIEW SKETCH OF BOOSTER $B_{20}W_{14}C_{48}V_8$

Figure 8.
BODY B20 - BOOSTER B-15 B-1 (LENGTHENED 10%) CONFIGURATION



MODEL DESCRIPTION

Delta Wing Booster - (Cont'd)

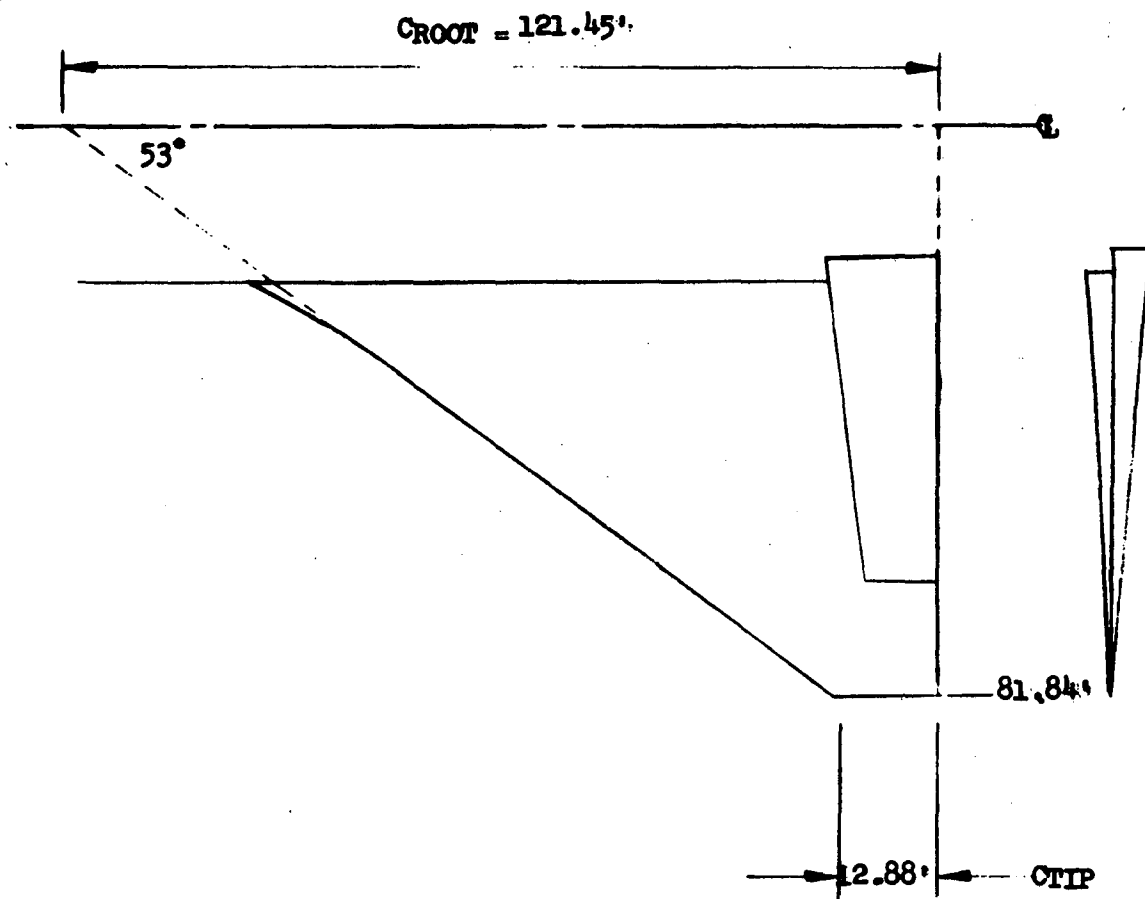


FIGURE 9. WING W₁₄ - BOOSTER CONFIGURATION

LOS ANGELES DIVISION
NORTH AMERICAN ROCKWELL CORPORATION

MODEL DESCRIPTION

Delta Wing Booster - (Cont'd)

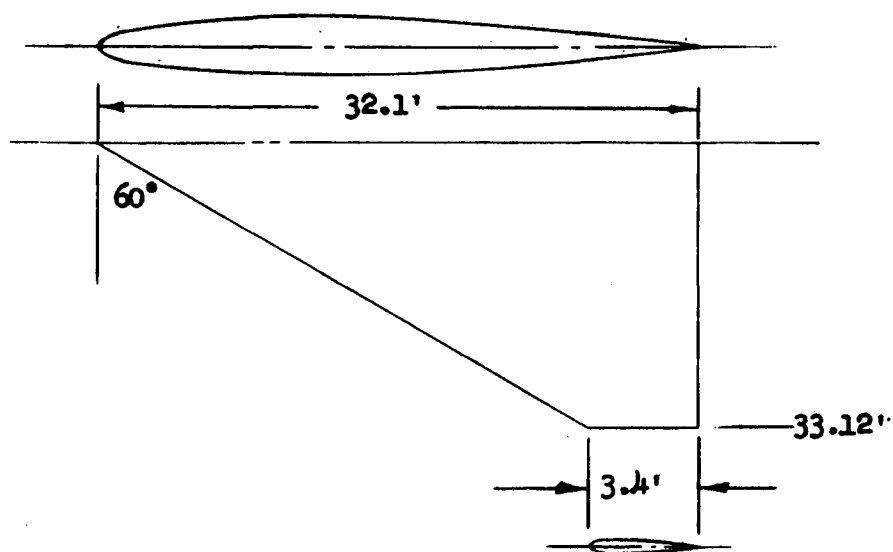


FIGURE 10. CANARD - C4

LOS ANGELES DIVISION
NORTH AMERICAN ROCKWELL CORPORATION

MODEL DESCRIPTION

Delta Wing Booster - (Cont'd)

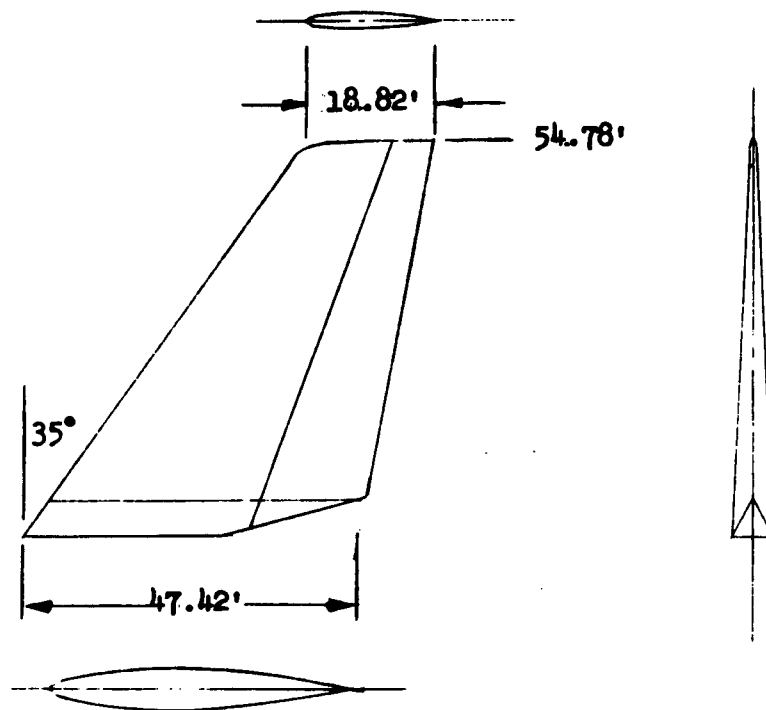
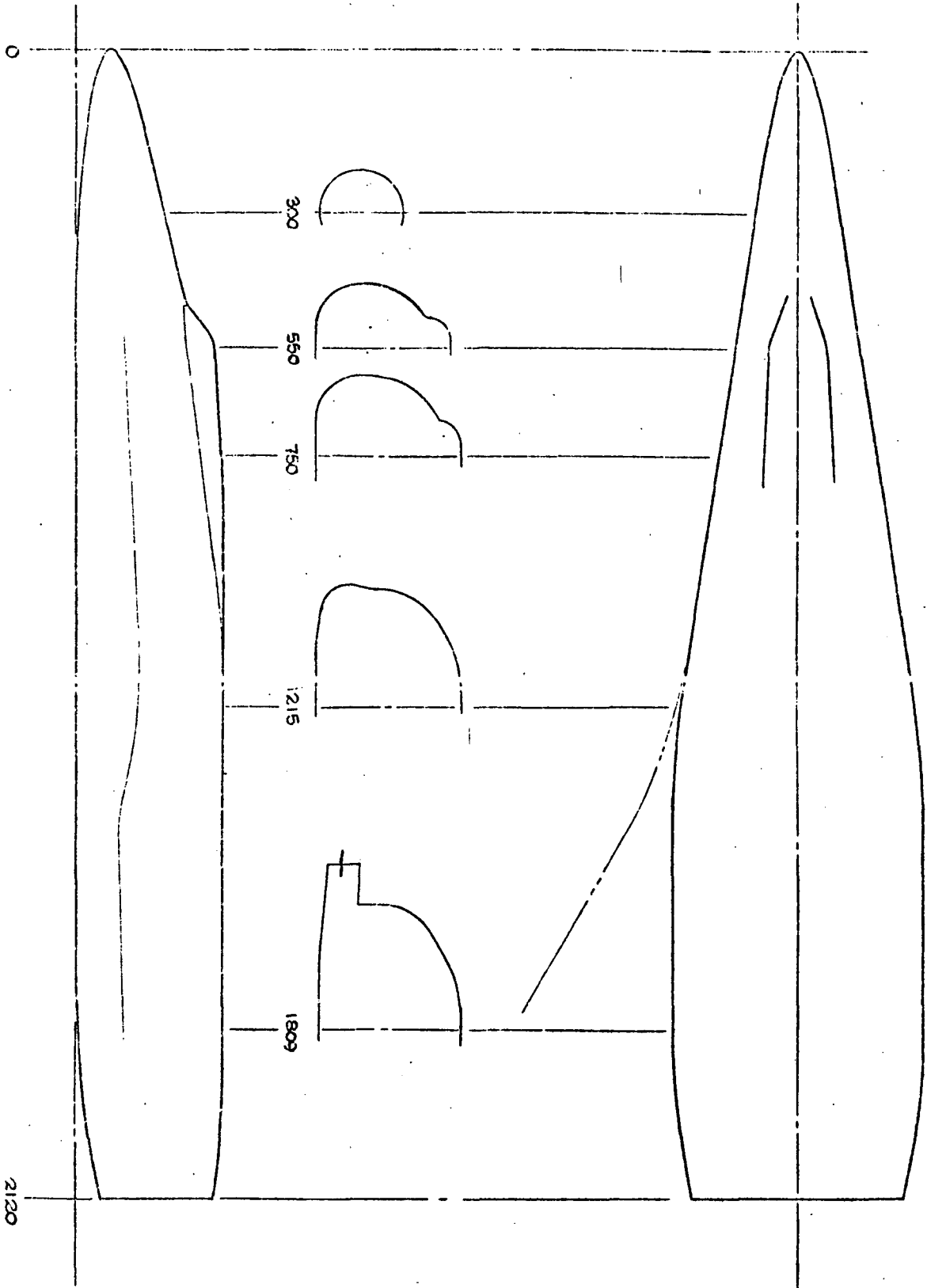


FIGURE 11. VERTICAL TAIL - V8

FIGURE 12. BODY B5. 9902-134B CONFIGURATION



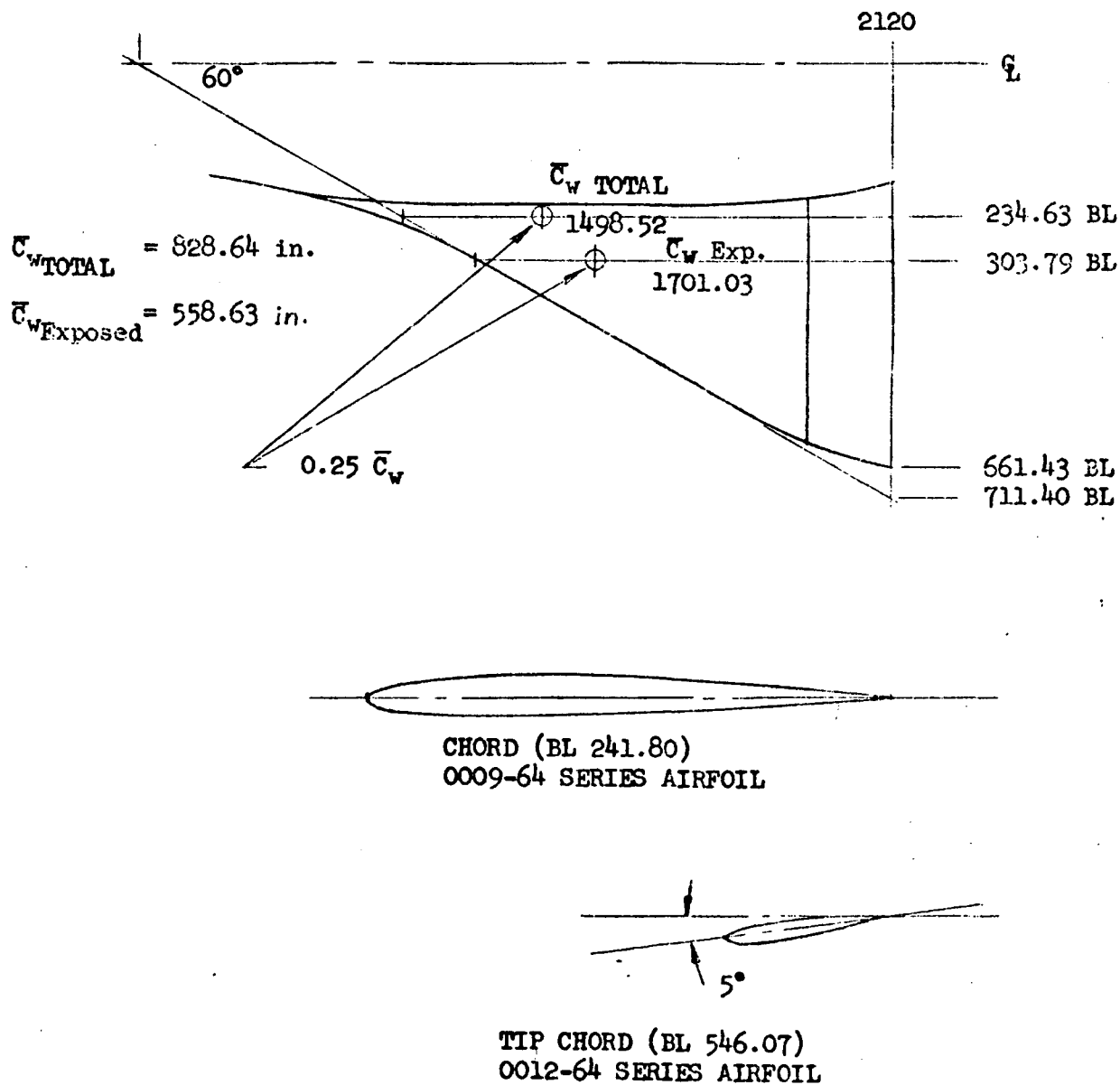


FIGURE 13. WING W₁₇ 9992-134 D Configuration

LOS ANGELES DIVISION
NORTH AMERICAN ROCKWELL CORPORATION

MODEL DESCRIPTION - CONTINUED
Dimensional Data - Continued
Delta Wing Orbiter - Continued

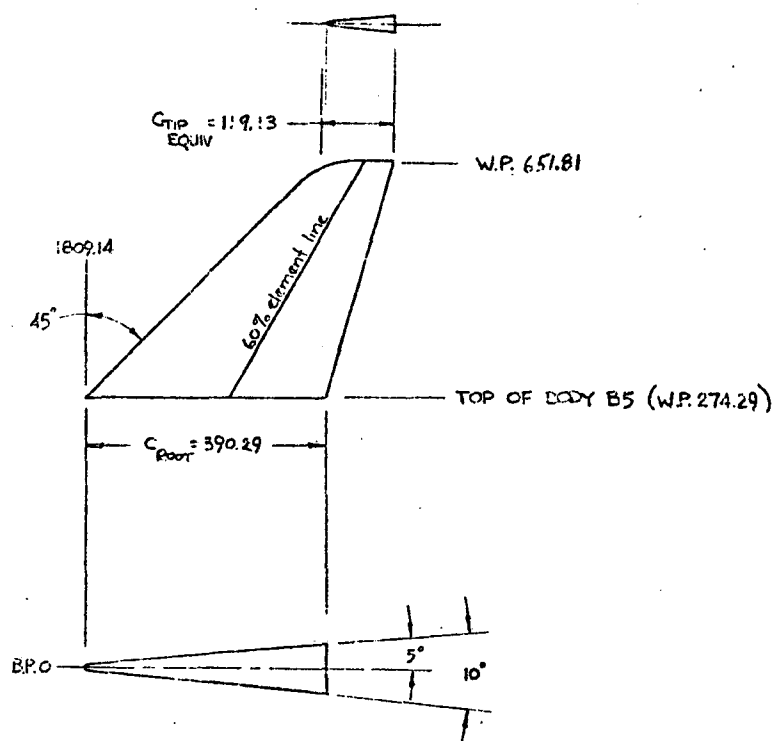
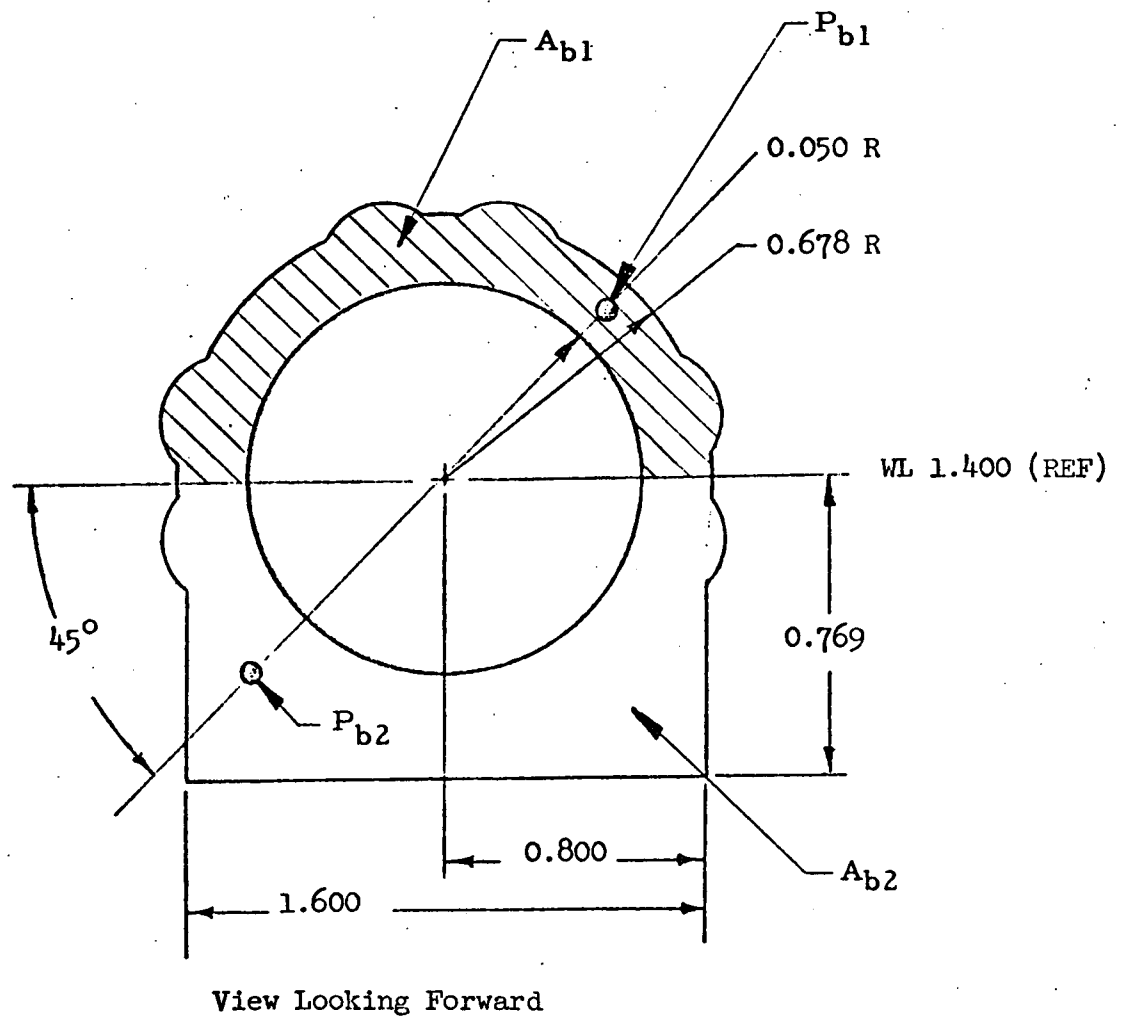


FIGURE 14.
VERTICAL STABILIZER V17



NOTE: Location of pressure taps may vary slightly as installation will be made during test setup.

FIGURE 15. BOOSTER BASE PRESSURE ORIFICE LOCATIONS

Notes:

1. Positive directions of force coefficients moment coefficients, and angles are indicated by arrows.
2. For clarity, origins of wind and stability axes have been displaced from the center of gravity.

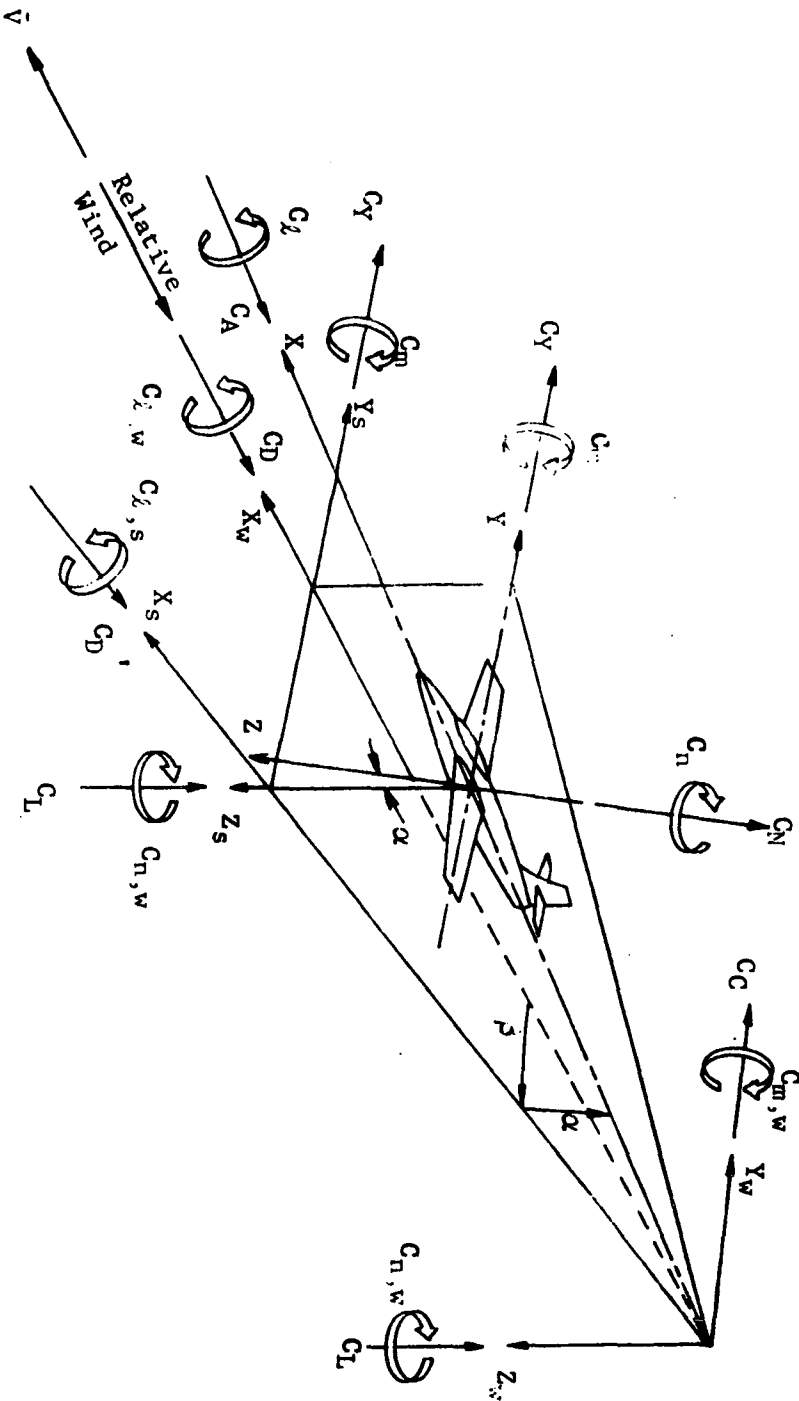
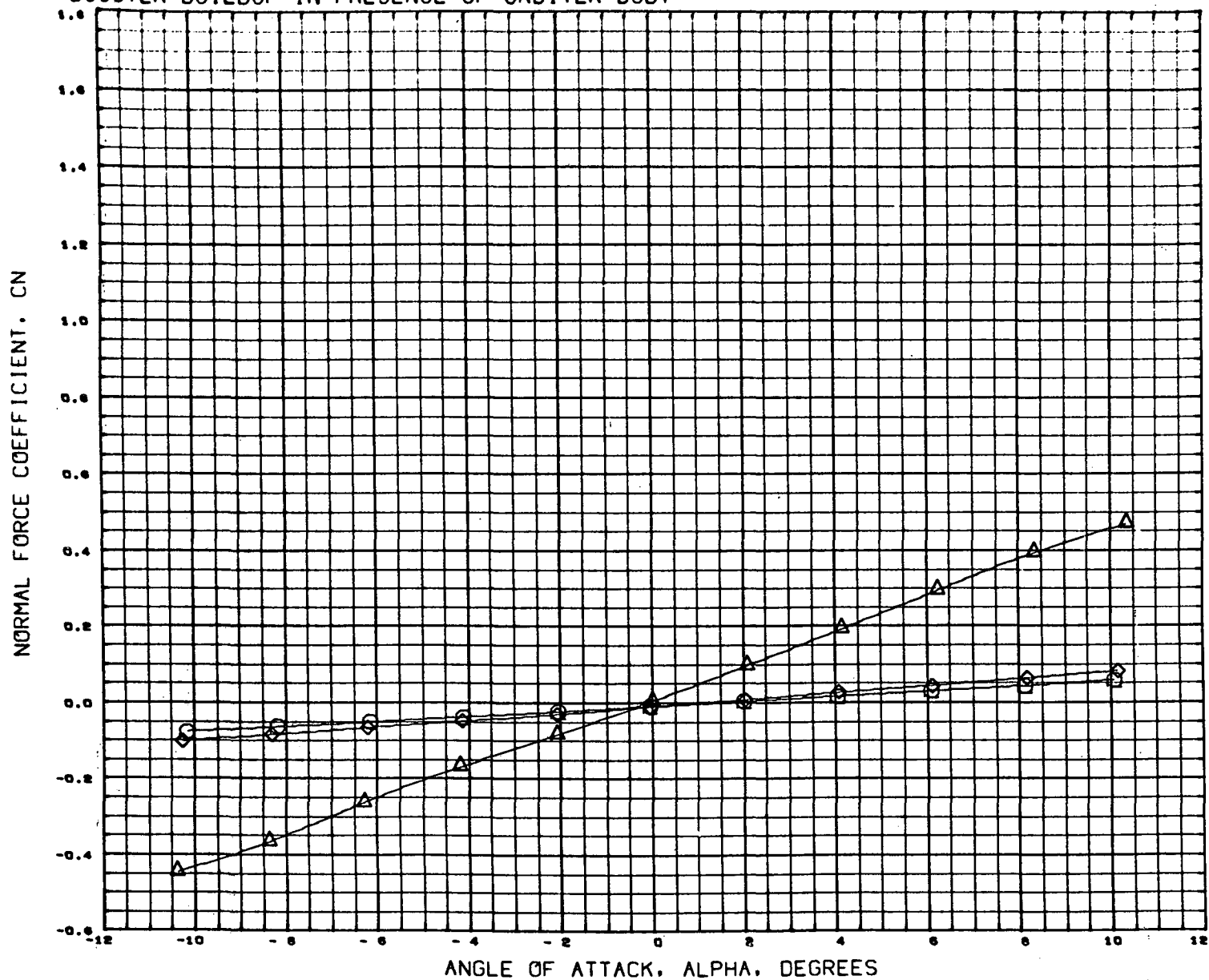


Figure 16. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle

DATA FIGURES

Tabulations of the plotted data and corresponding source data are available from SADSAC Operations.

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



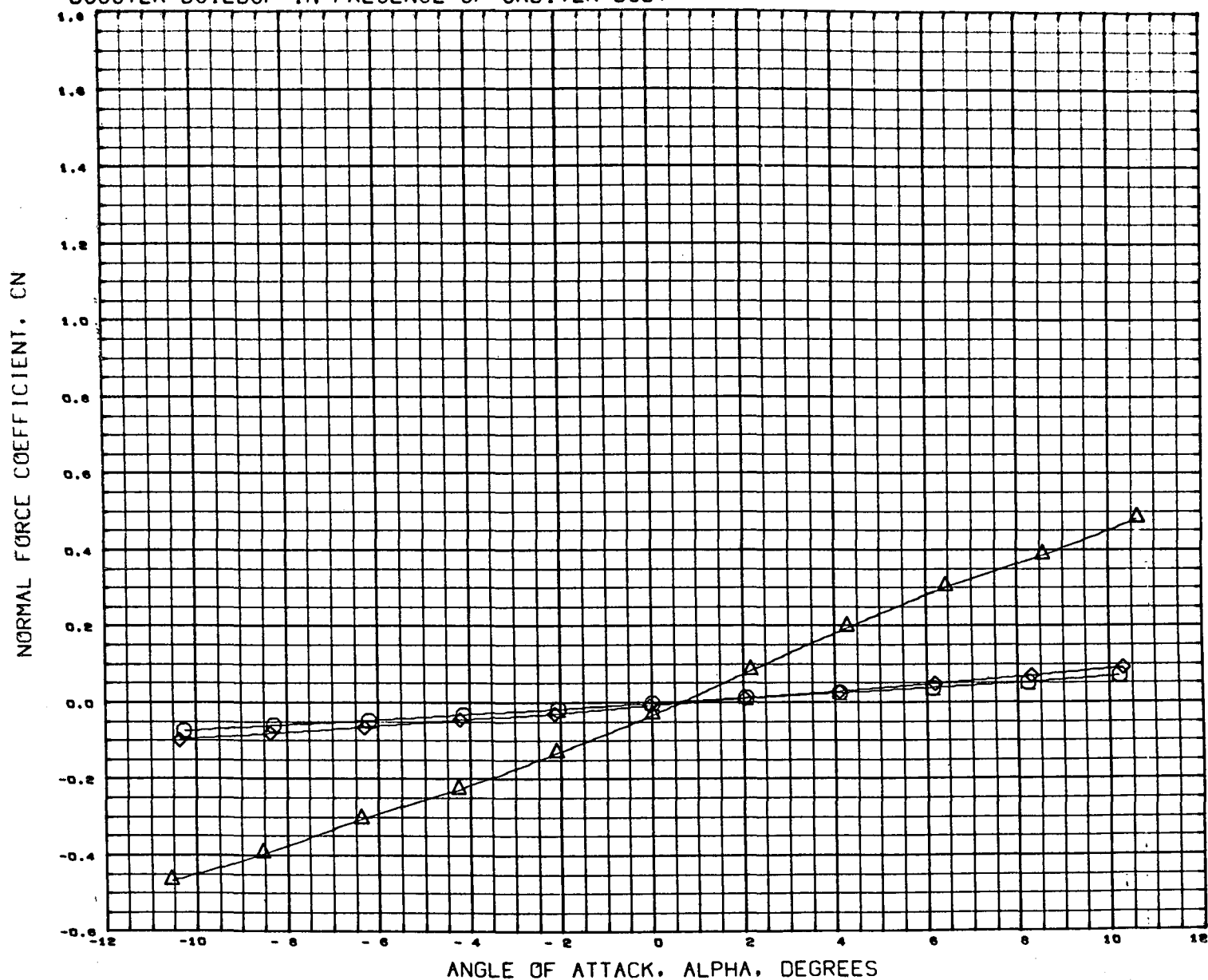
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0.000 1.000 0.000
0.000 1.000 0.000

REFERENCE INFORMATION
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LREF 3.0950 INCHES
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MACH 0.999

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



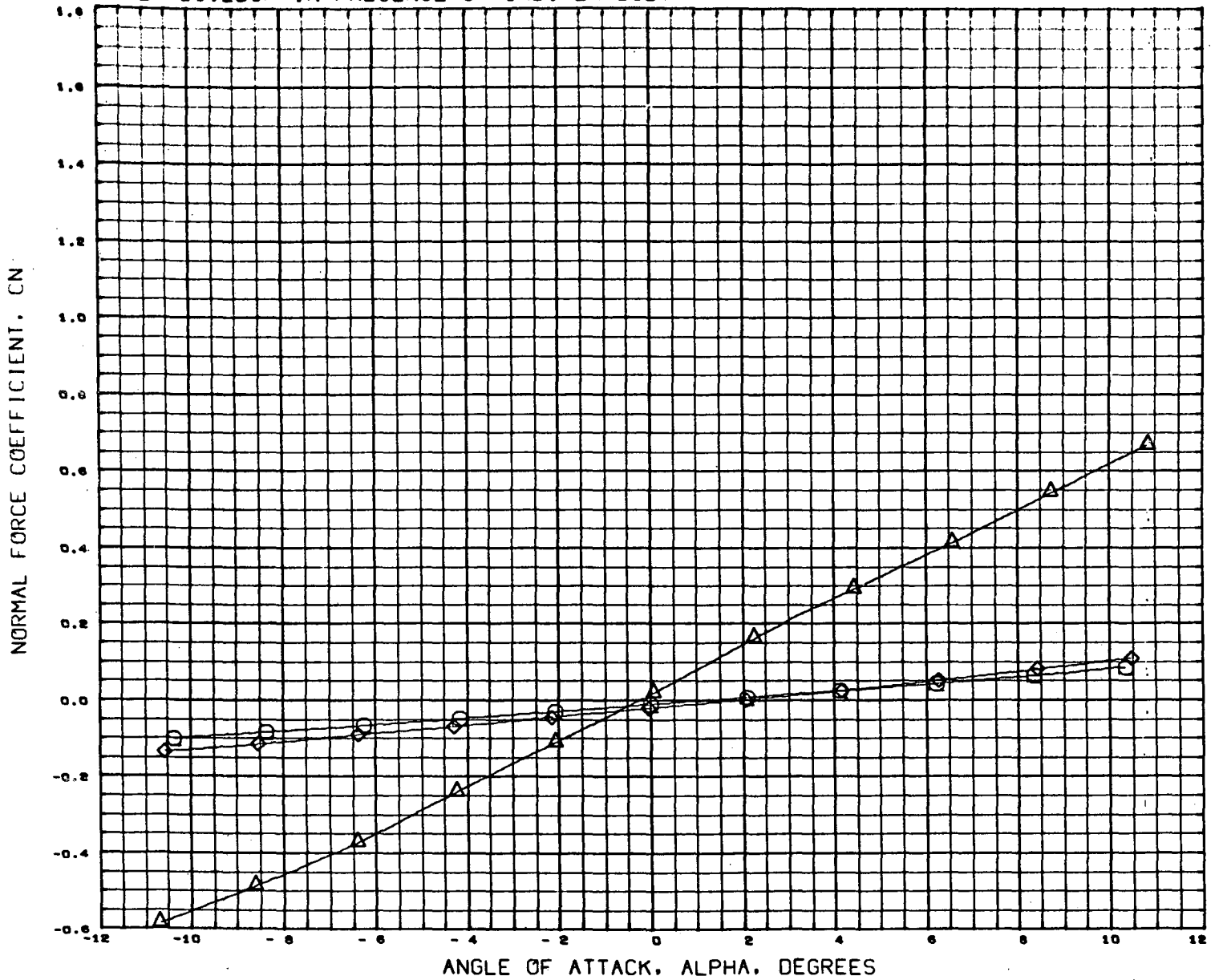
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| BETA | POSITN | ORBINC |
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MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



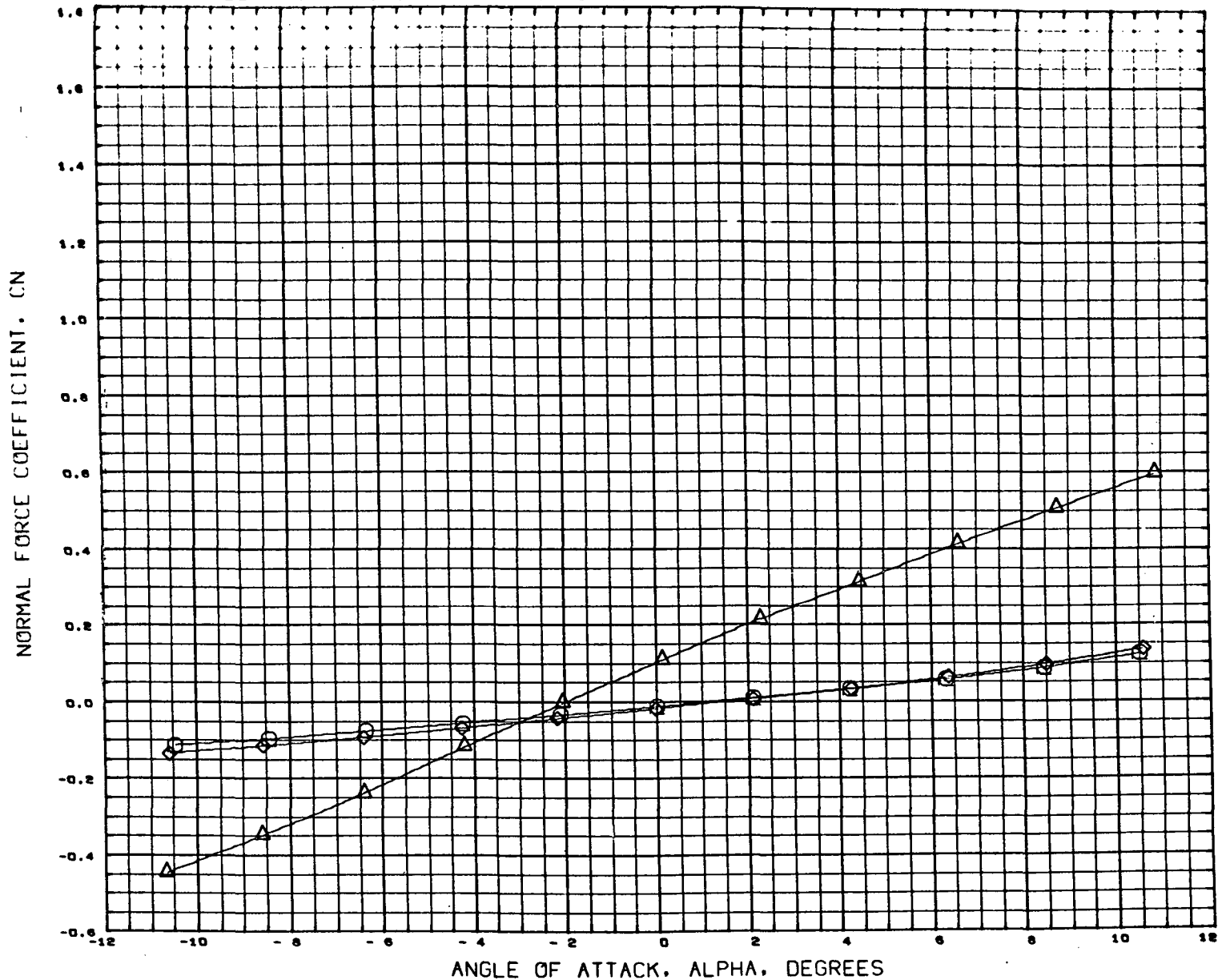
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| BETA | POSITN | ORBINC |
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MACH 1.096

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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(H3209A) MSFC490 NR/GD LAUNCH B20W14+B5

(H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5

BETA POSITN ORBINC

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0.000 1.000 0.000

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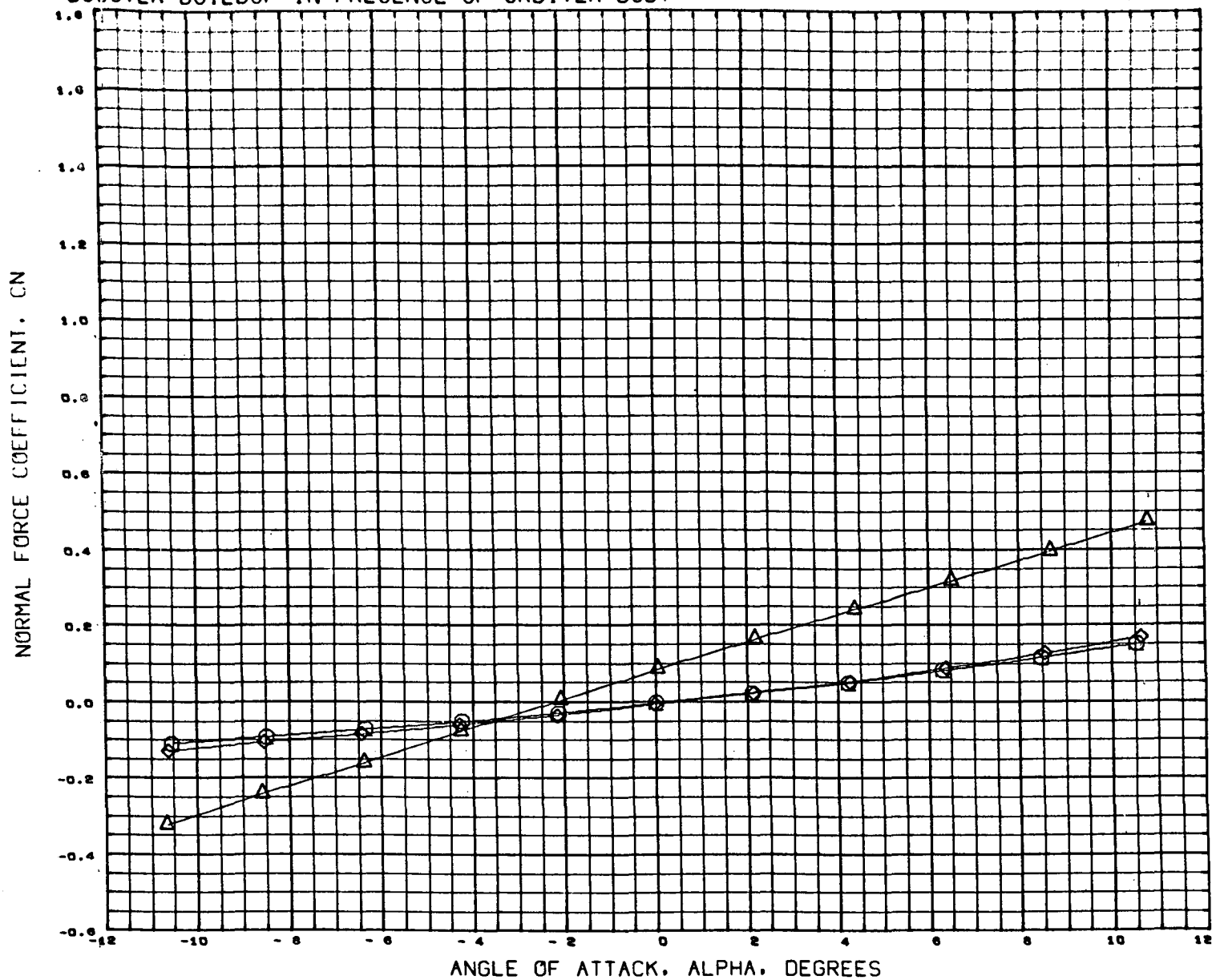
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MACH 1.469

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



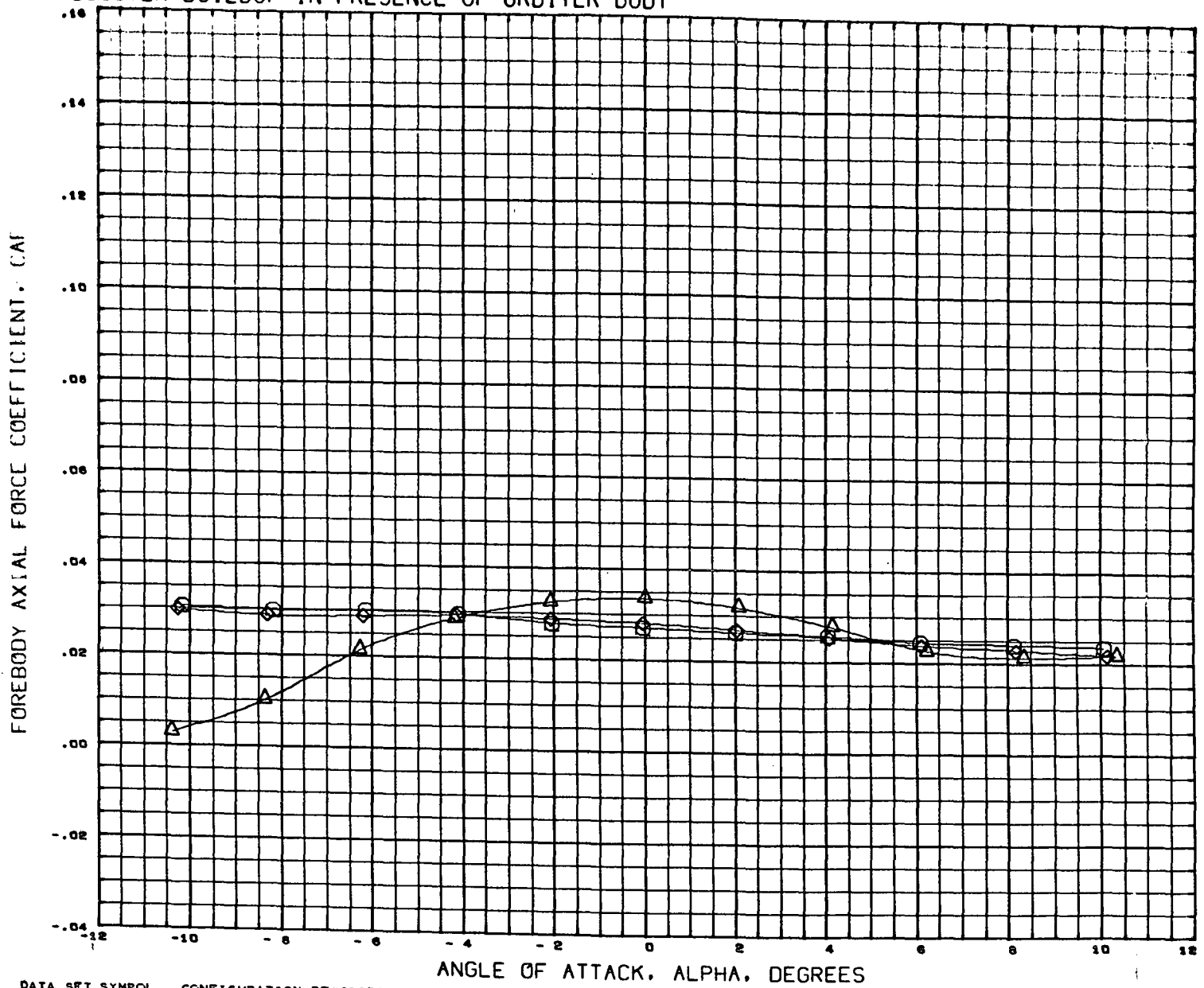
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BETA POSITN ORBINC
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0.000 1.000 0.000
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MACH 1.998

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



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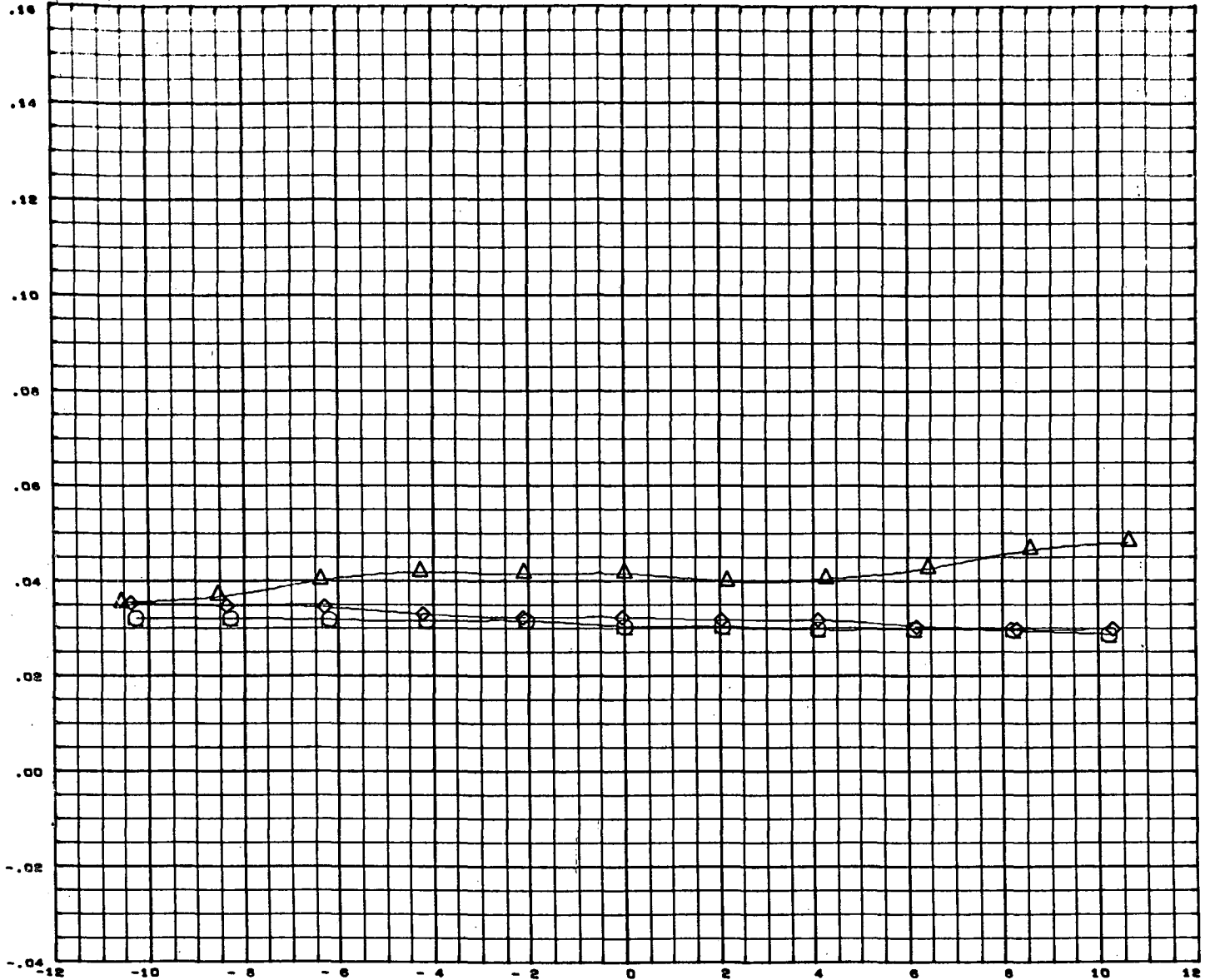
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MACH 0.599

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY

FOREBODY AXIAL FORCE COEFFICIENT, CAF



ANGLE OF ATTACK, ALPHA, DEGREES

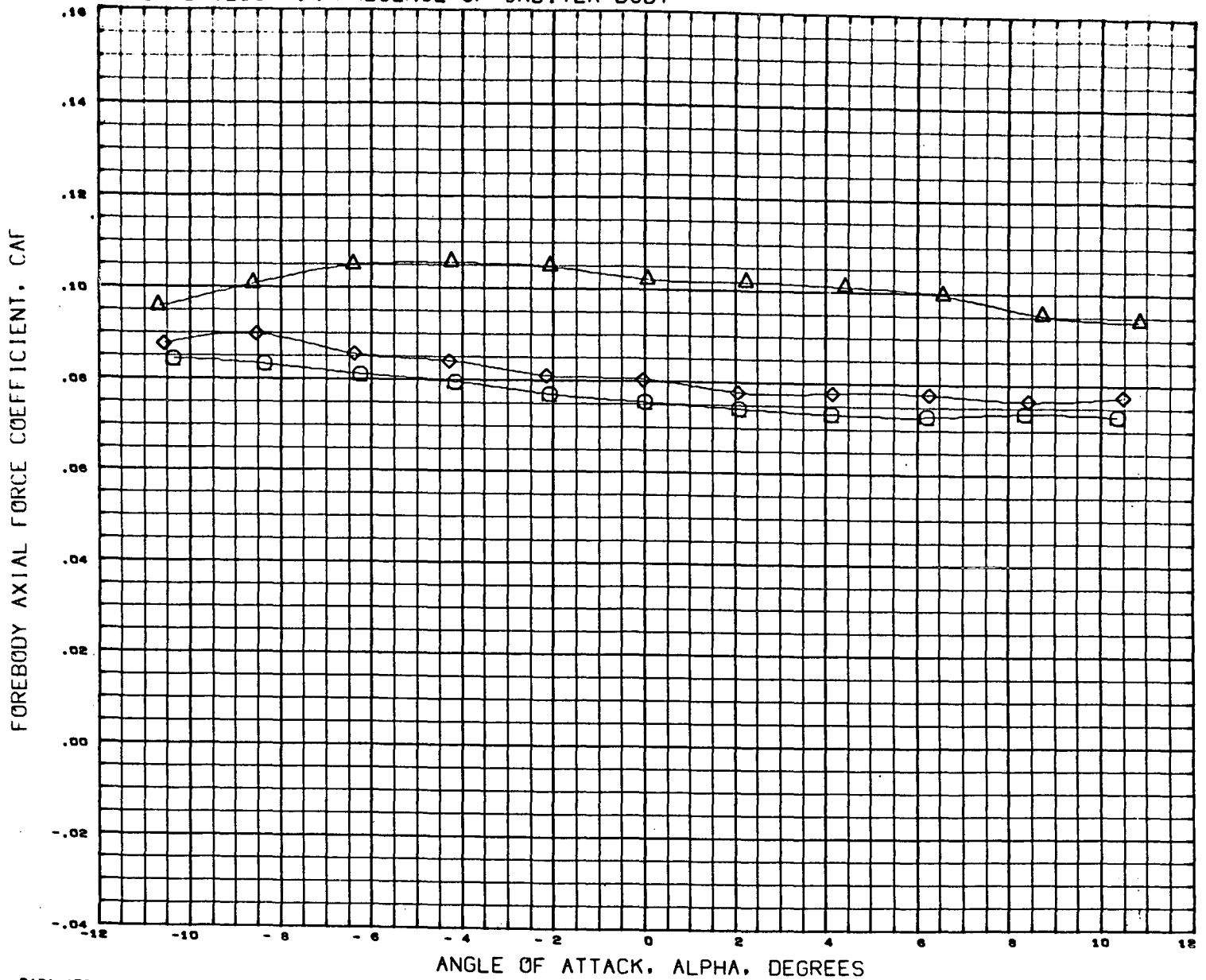
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MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



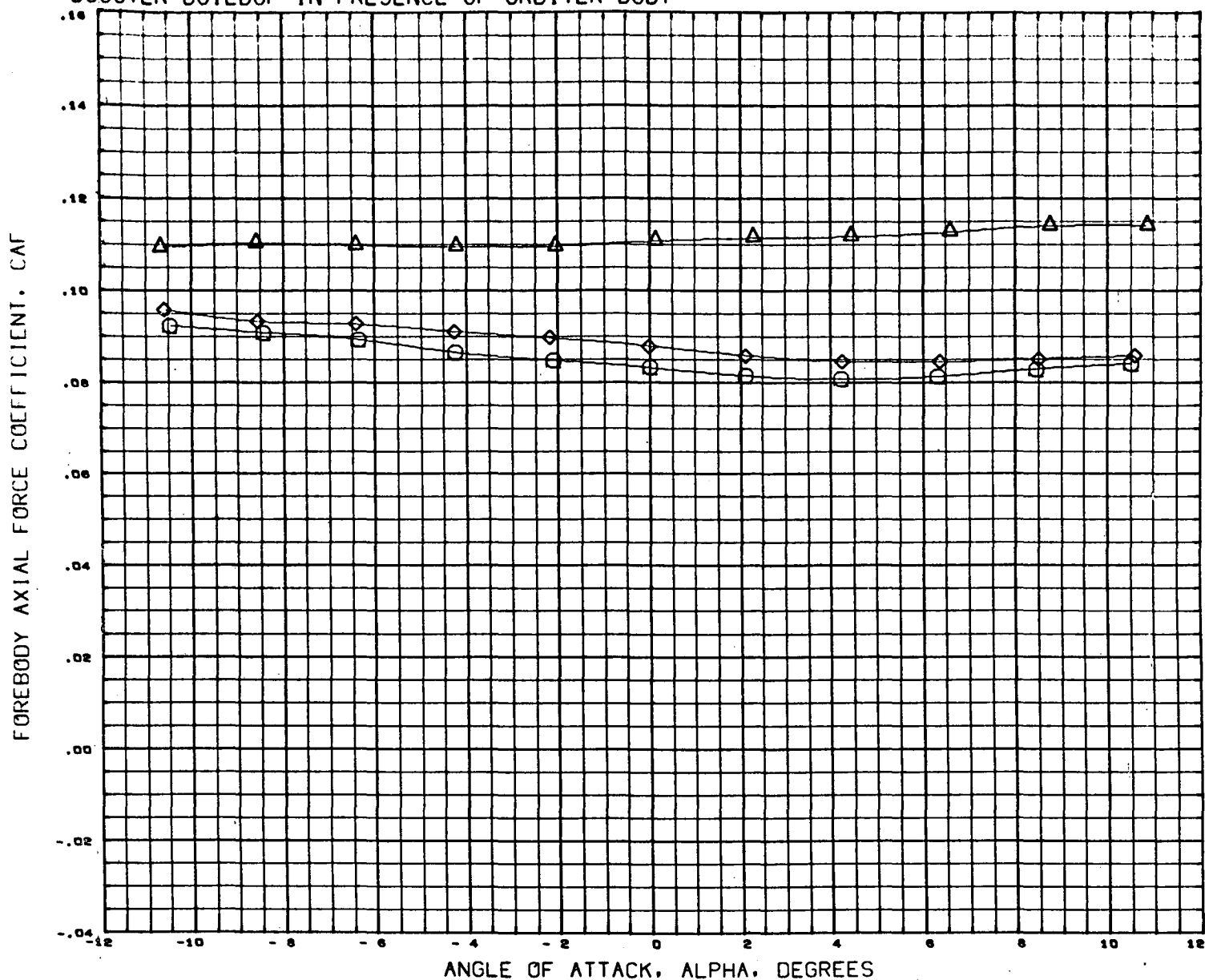
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| BETA | POSITN | ORBINC |
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MACH 1.096

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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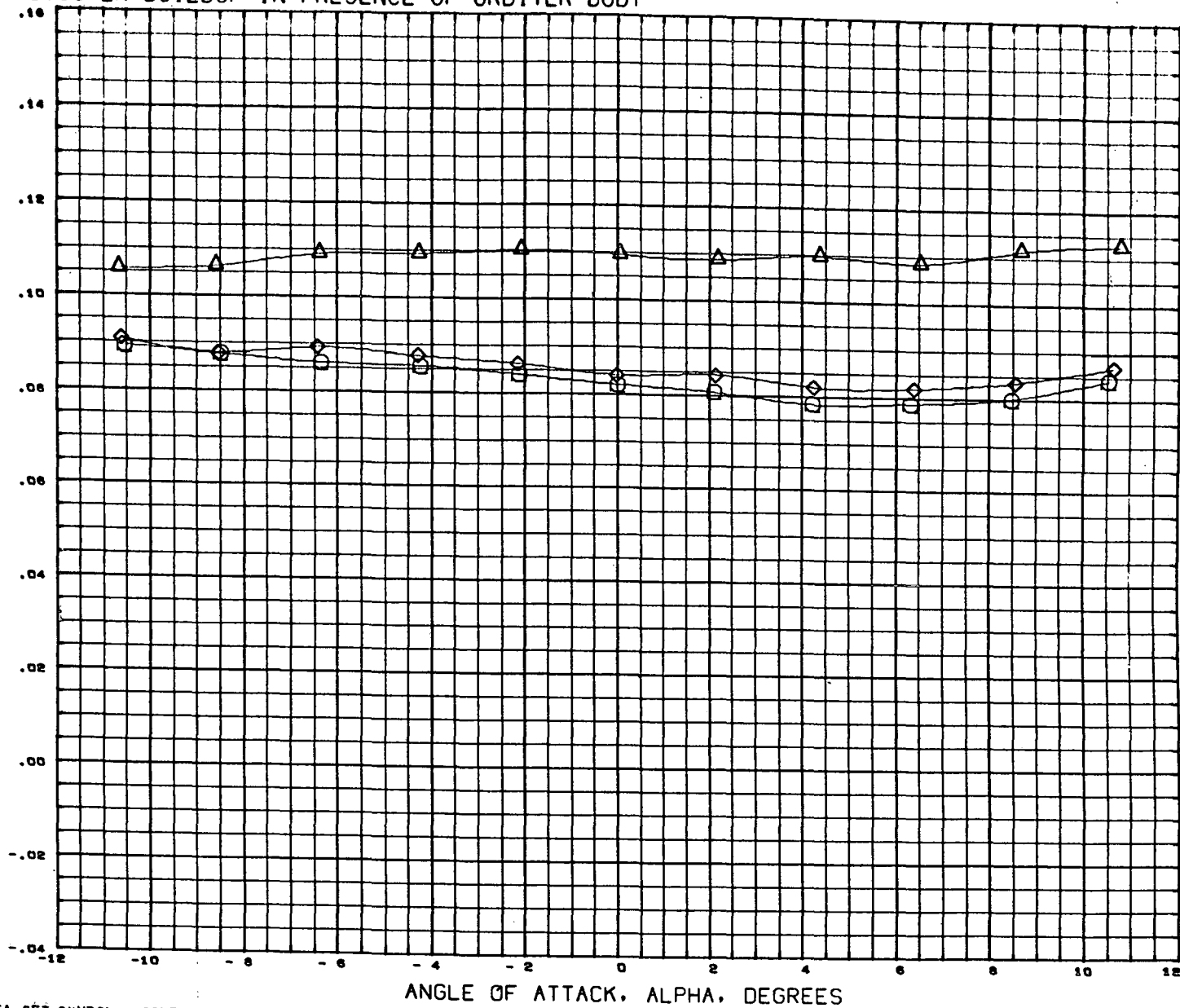
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MACH 1.469

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



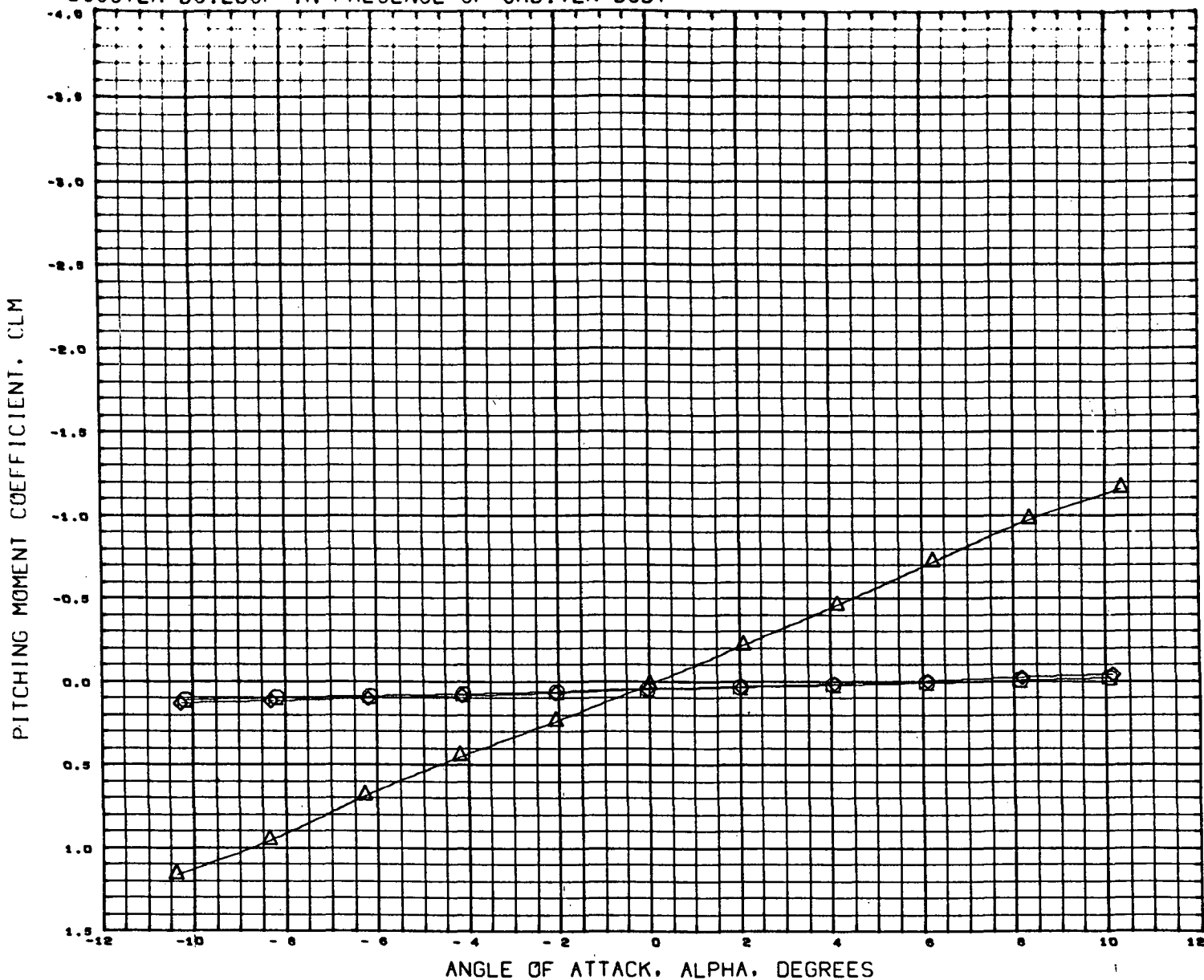
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MACH 1.958

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



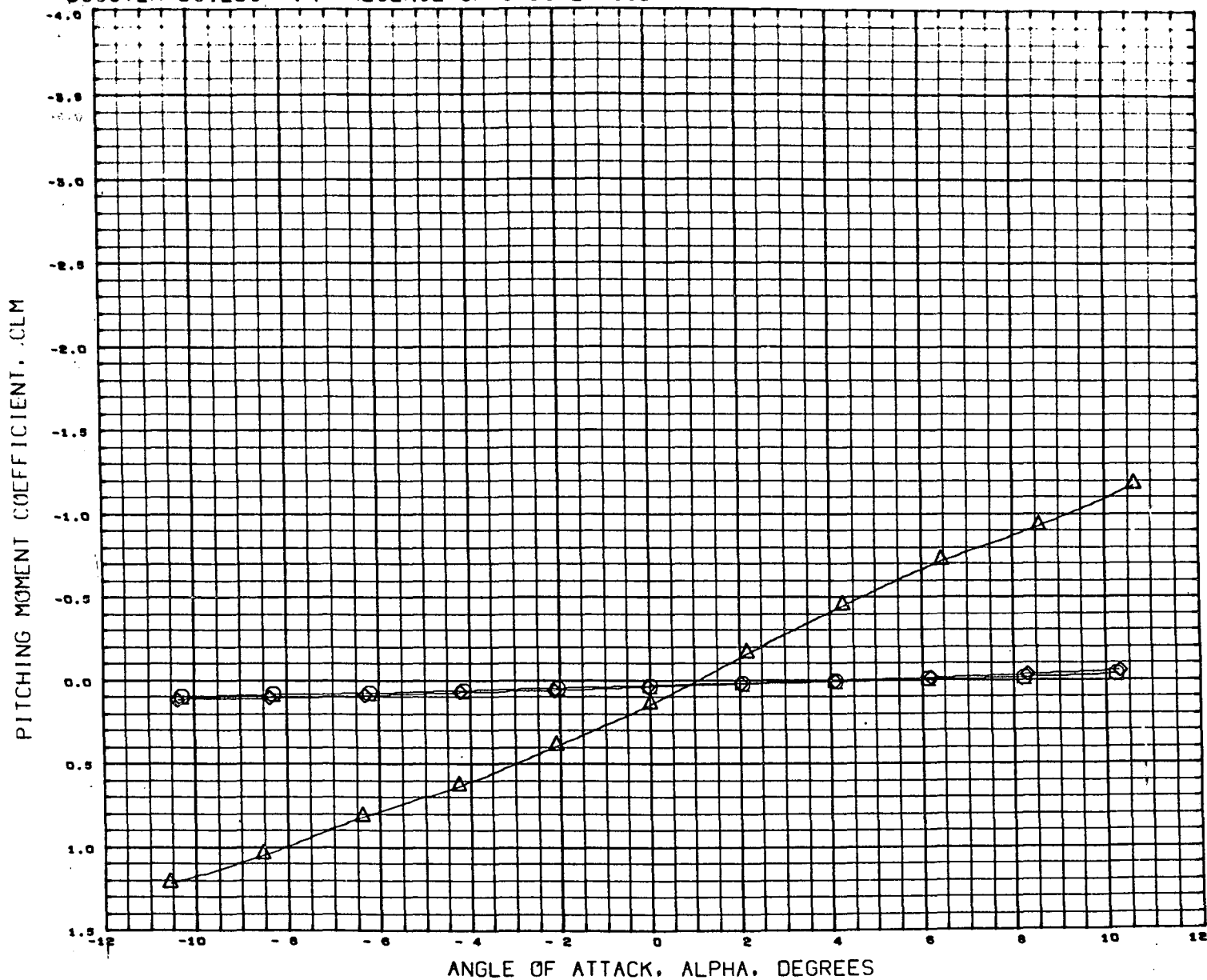
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MACH 0.599

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



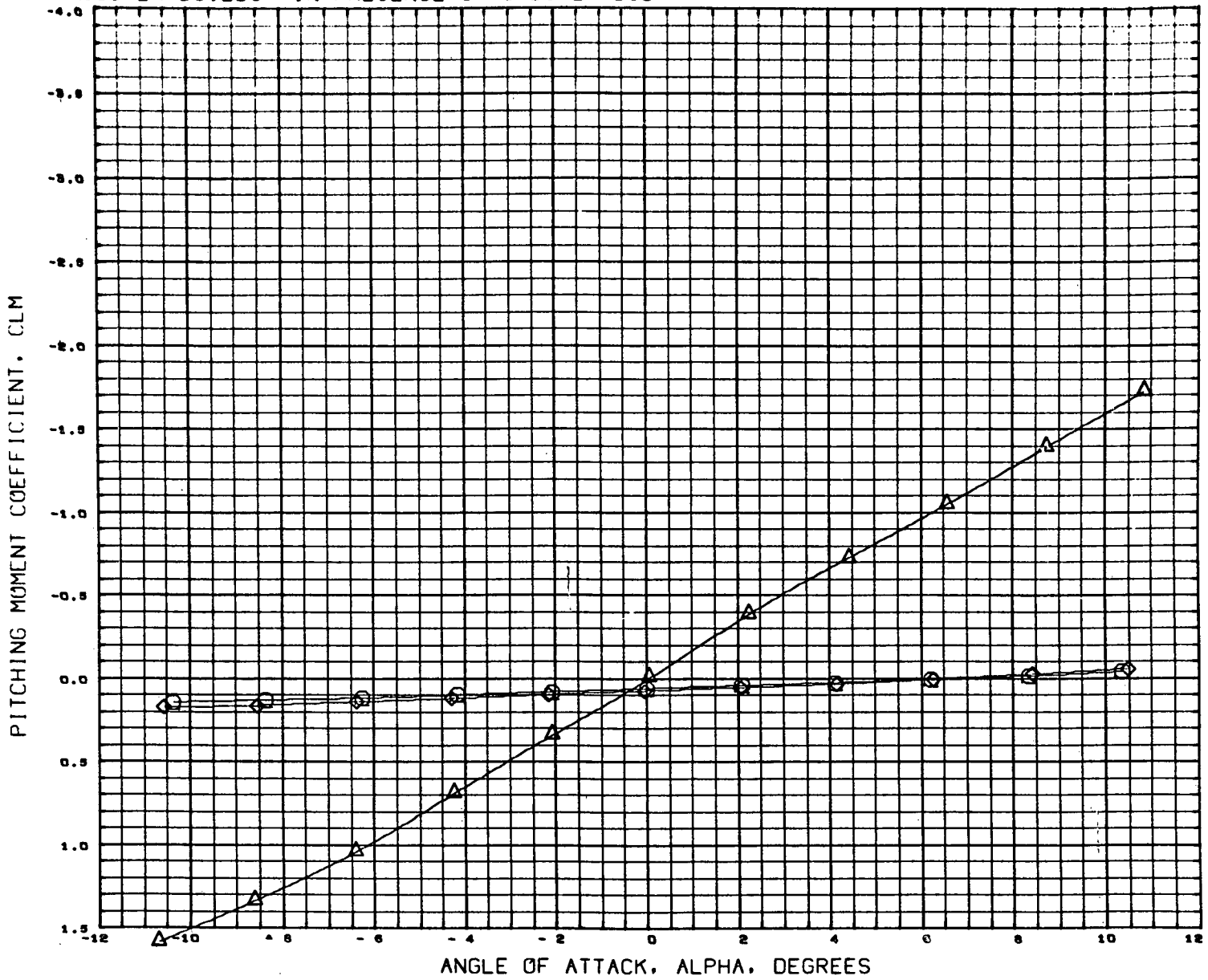
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MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



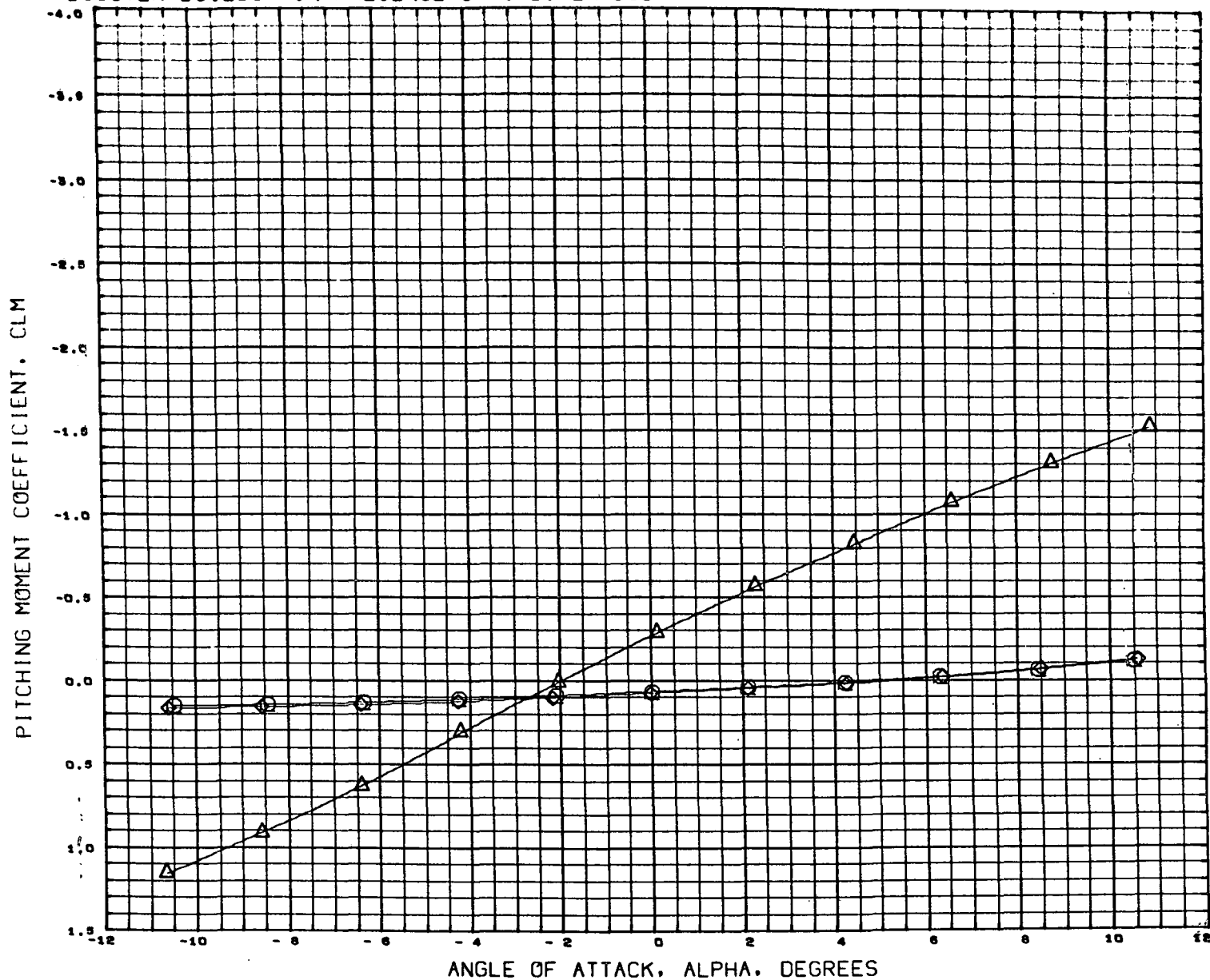
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| BETA | POSITN | ORBINC |
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MACH 1.096

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



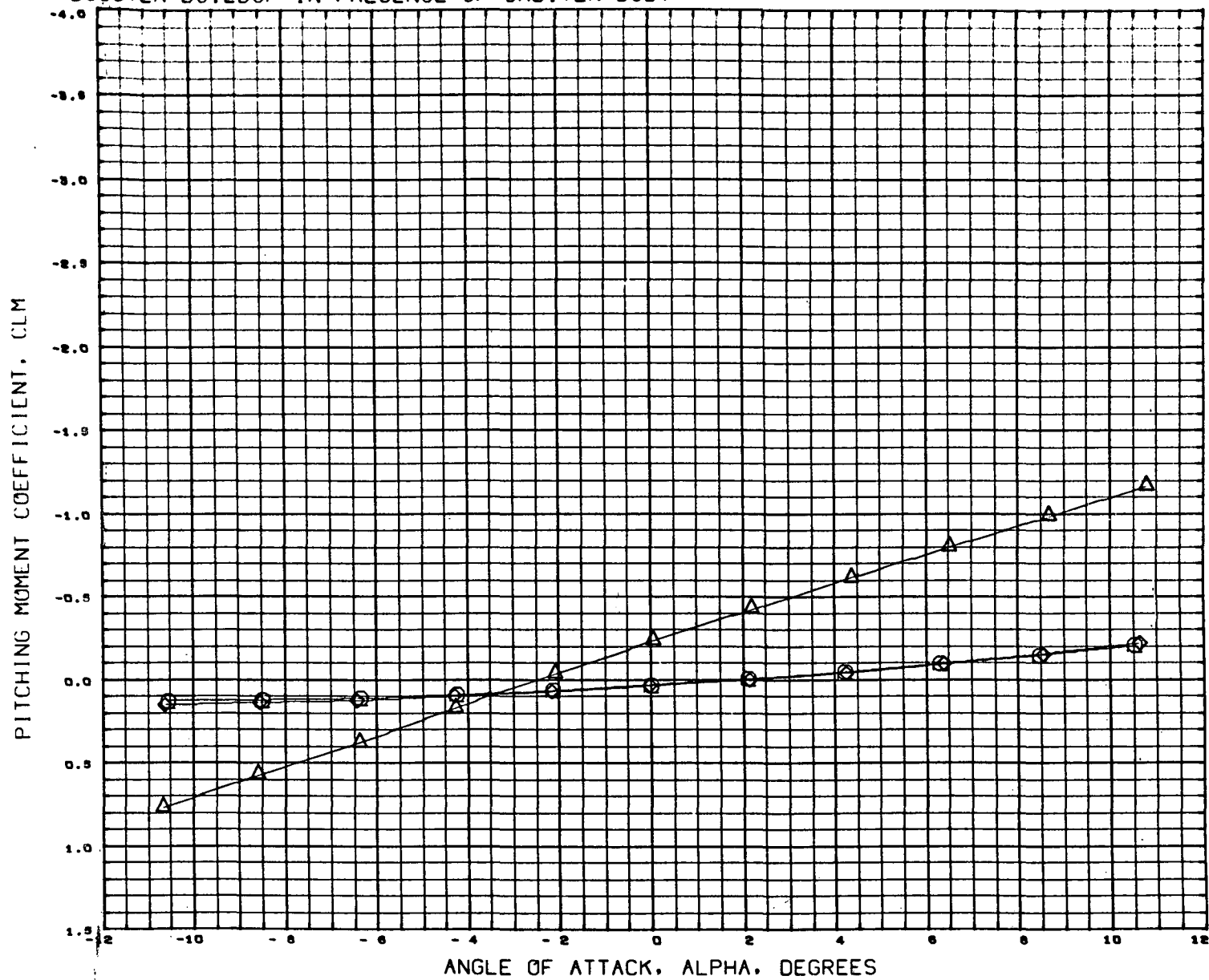
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MACH 1.469

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



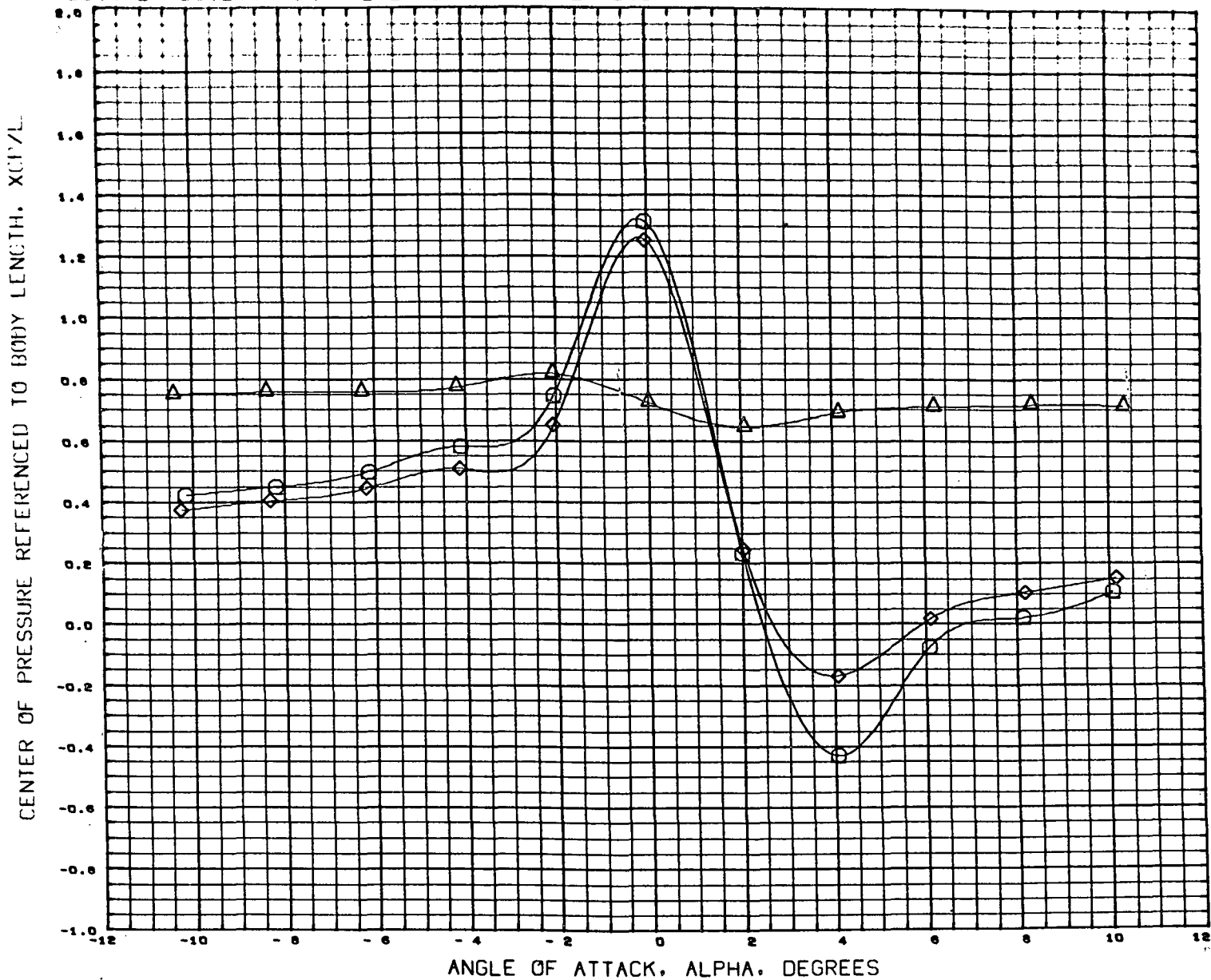
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MACH 1.938

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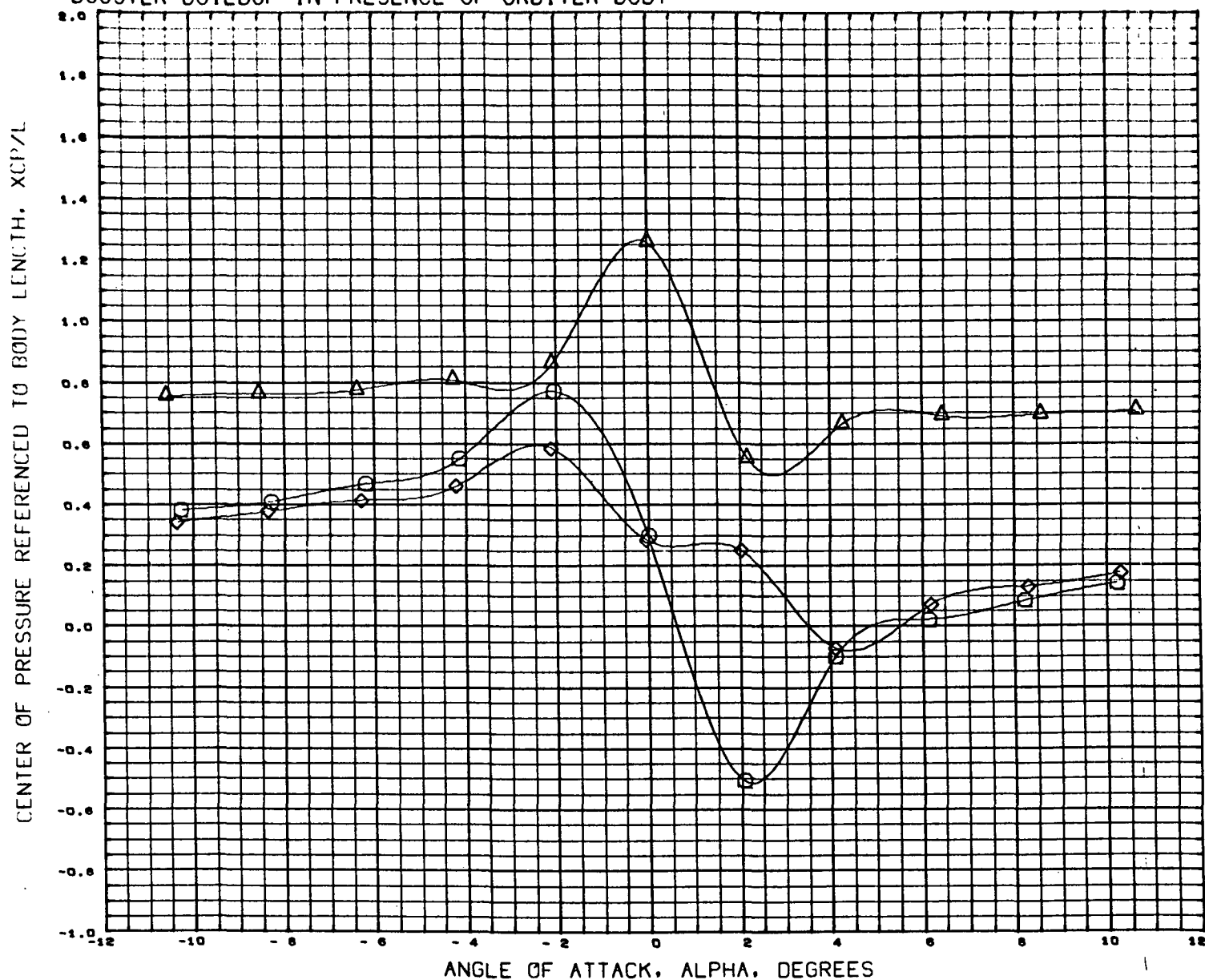
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| (H3212A) | ◇ | MSFC490 NR/GD LAUNCH B20C4B+B5 |

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MACH 0.599

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



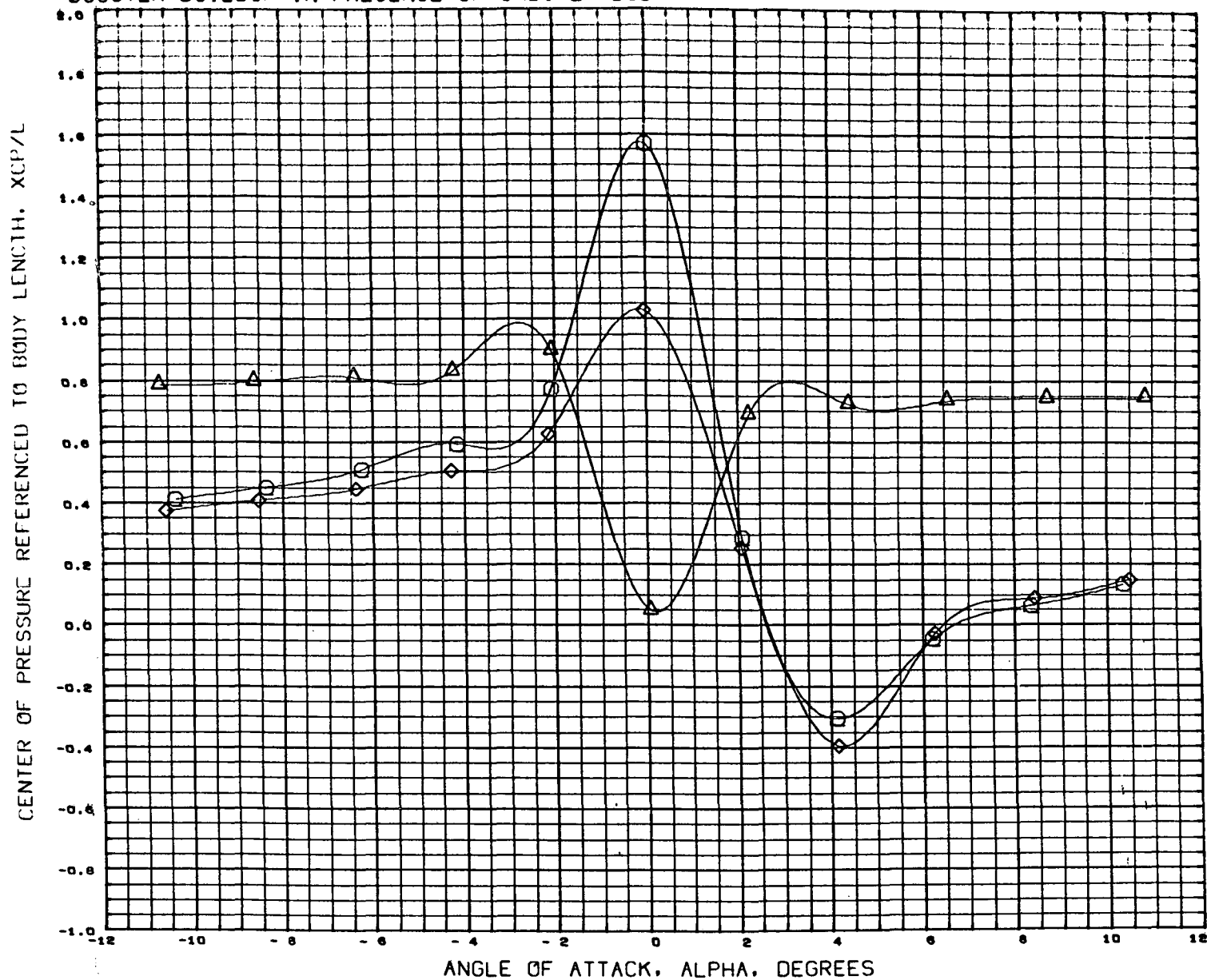
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| BETA | POSITN | ORBINC |
|-------|--------|--------|
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MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



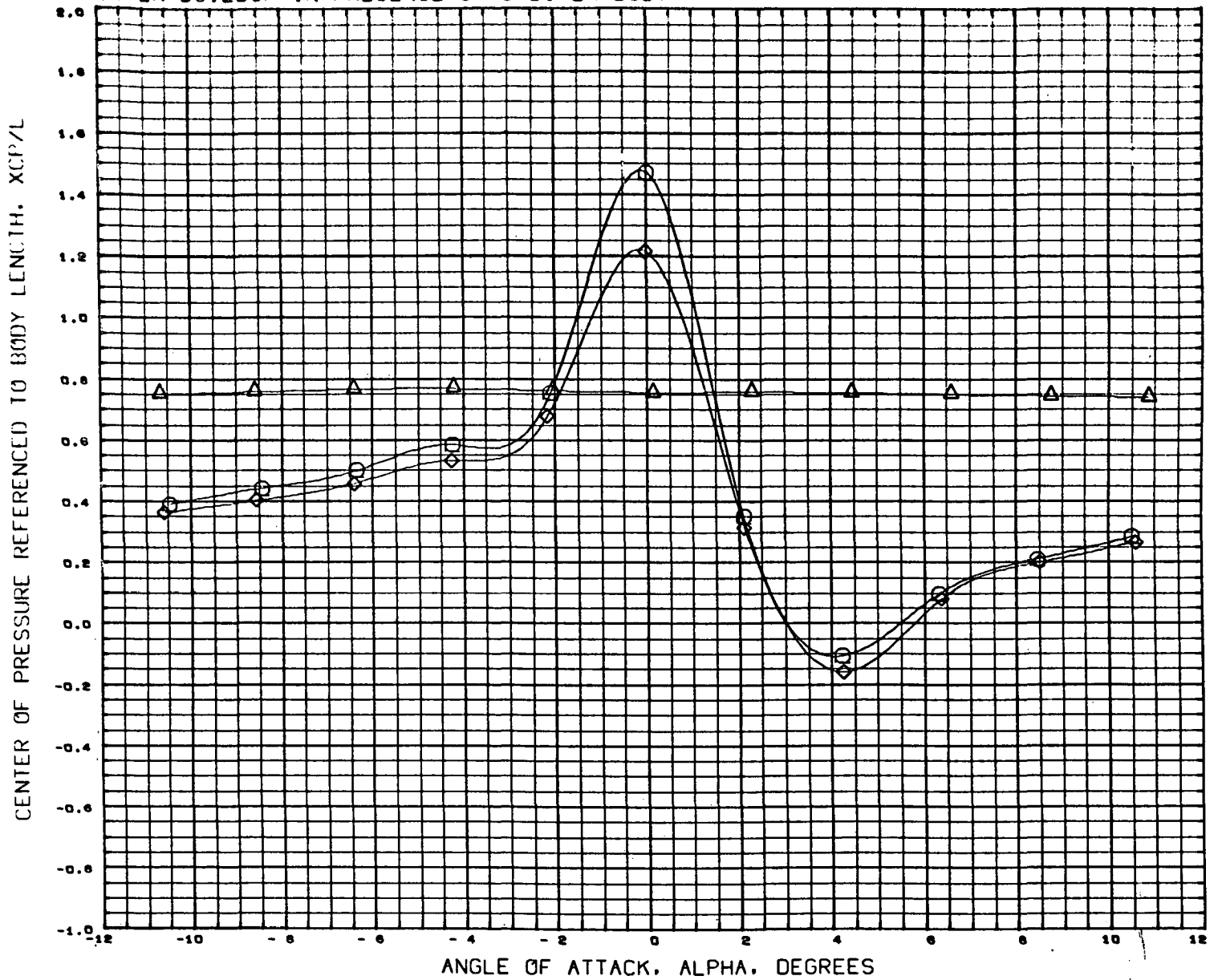
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MACH 1.096

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



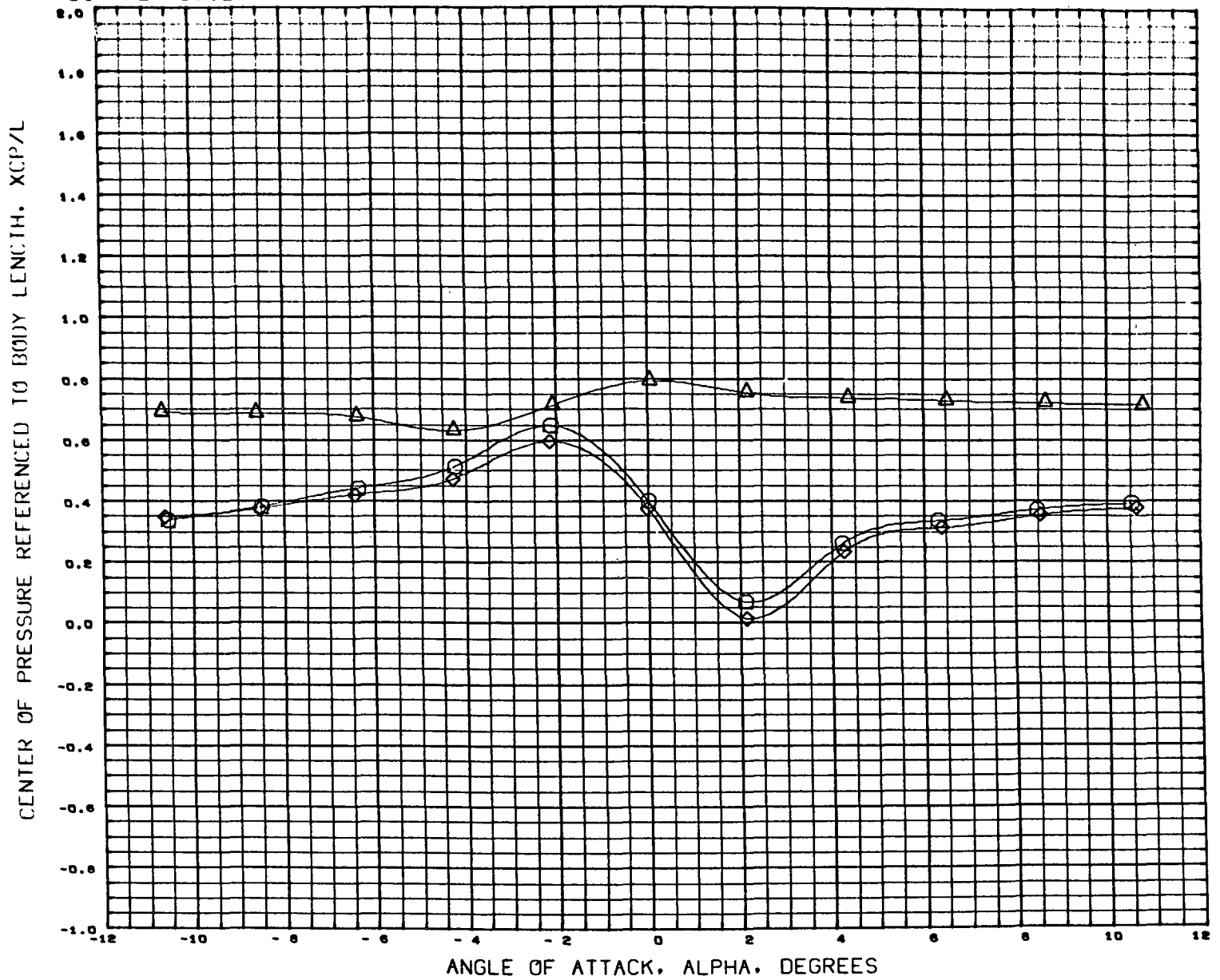
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3208A) MSFC490 NR/GD LAUNCH B20+B5
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 0.000 1.000 0.000
 0.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.469

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H3208A) MSFC490 NR/GD LAUNCH B20+B5

(H3209A) MSFC490 NR/GD LAUNCH B20W14+B5

(H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5

BETA POSITN ORBINC

0.000 1.000 0.000

0.000 1.000 0.000

0.000 1.000 0.000

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0950 INCHES

BREF 6.0990 INCHES

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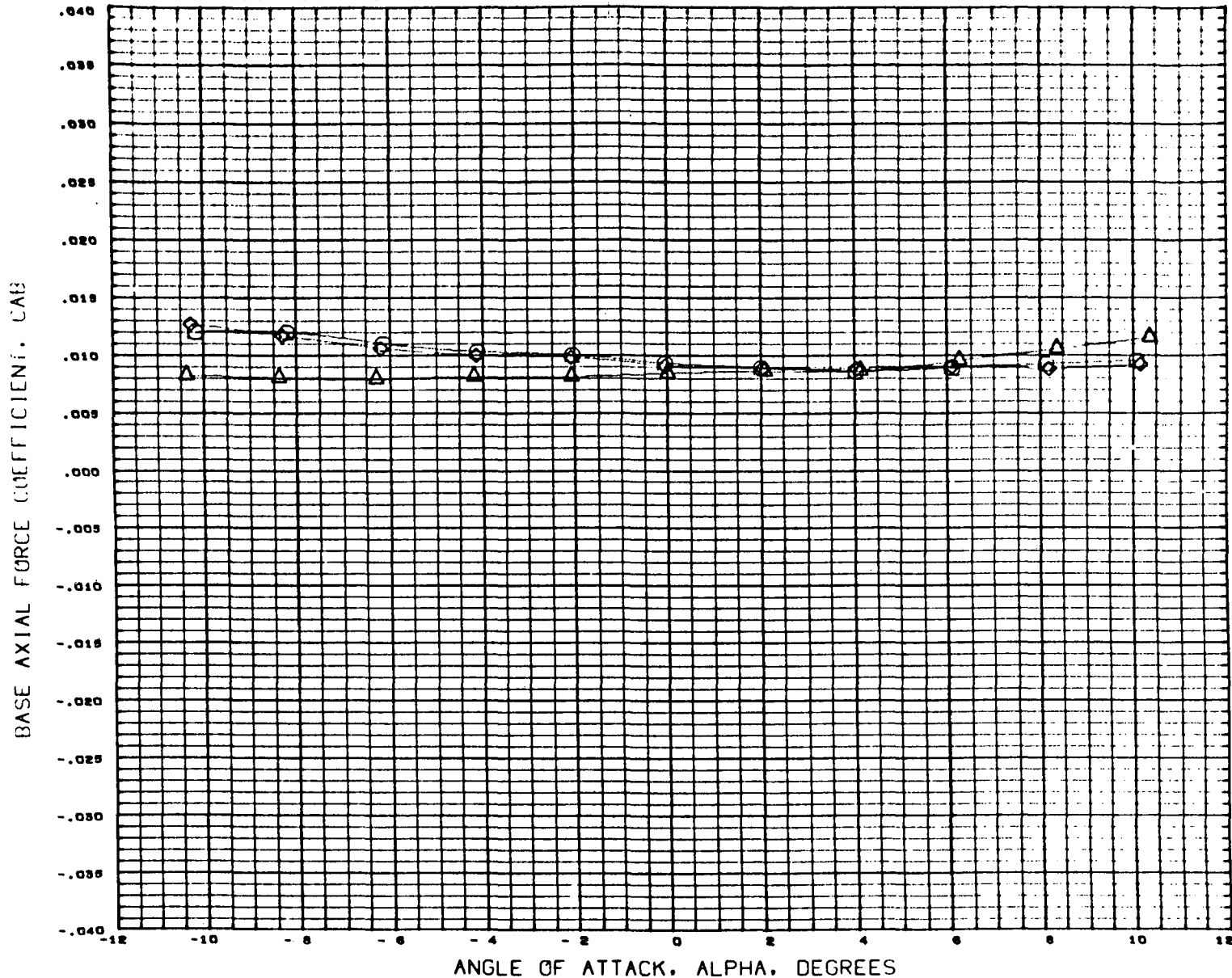
YMRP 0.0000

ZMRP 0.0000

SCALE 0.0035 SCALE

MACH 1.958

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



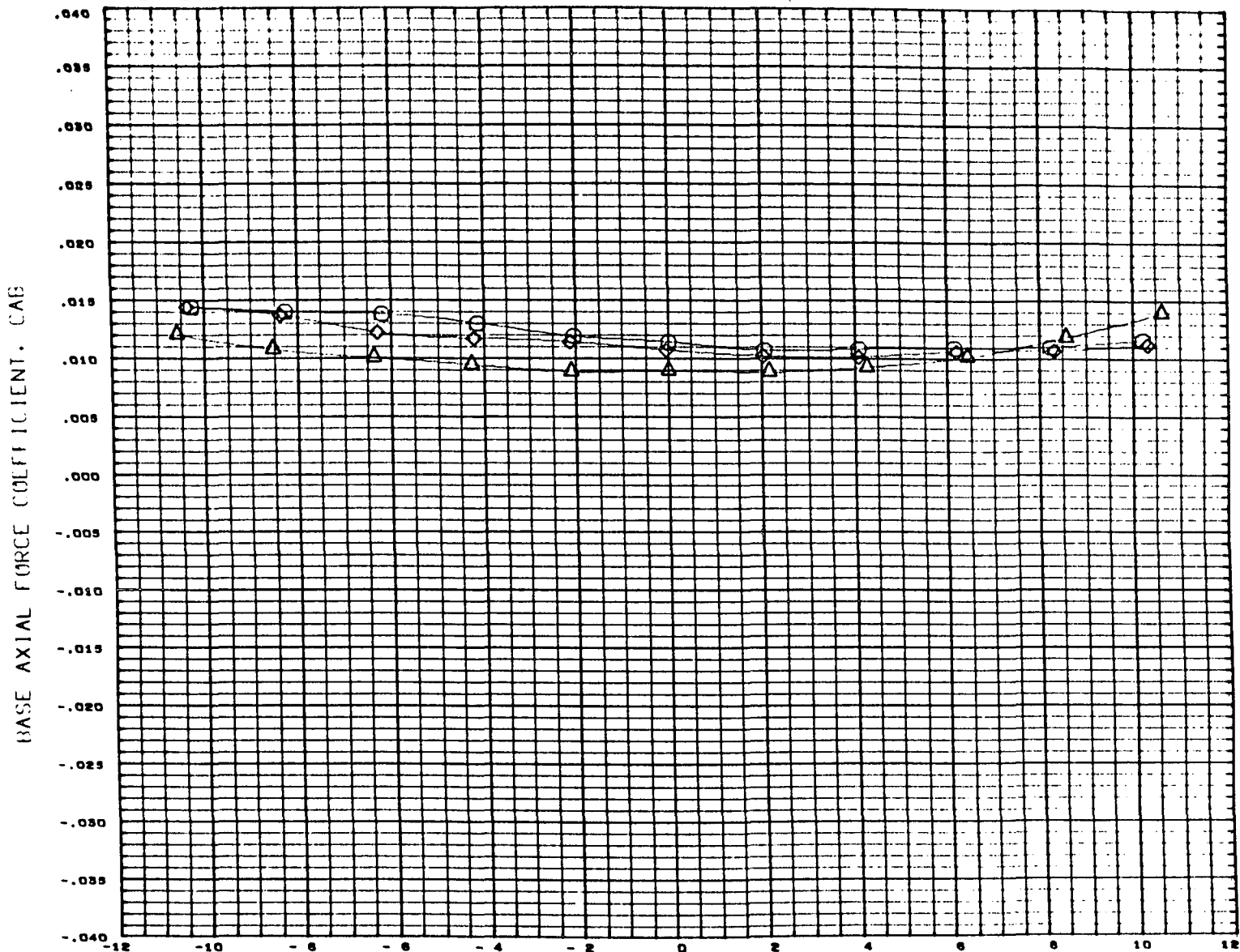
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|-----------------|--------------------------------|
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| (H3212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| SREF | 15.6560 | 30 IN |
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
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| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.599

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



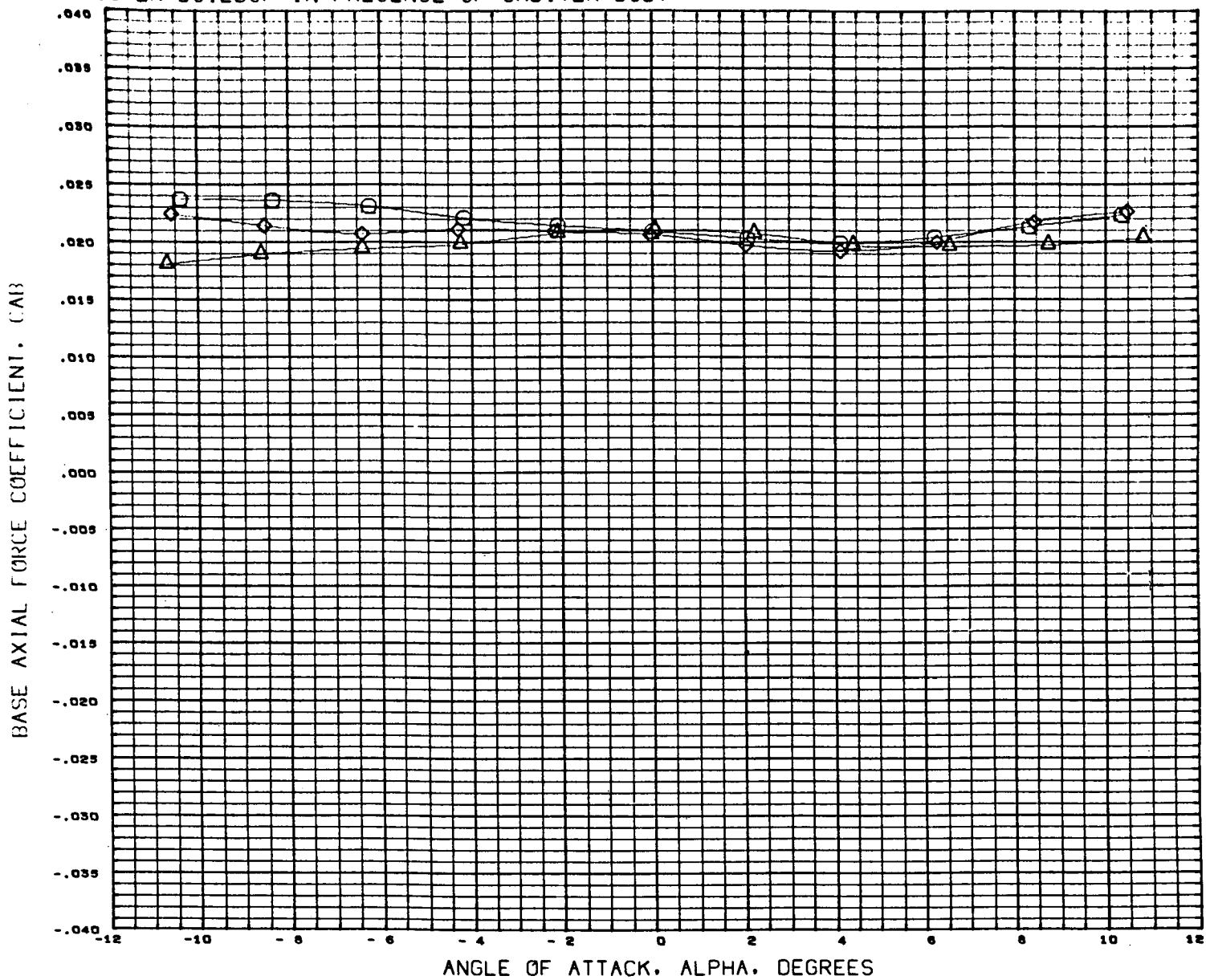
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| (H3209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.697

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



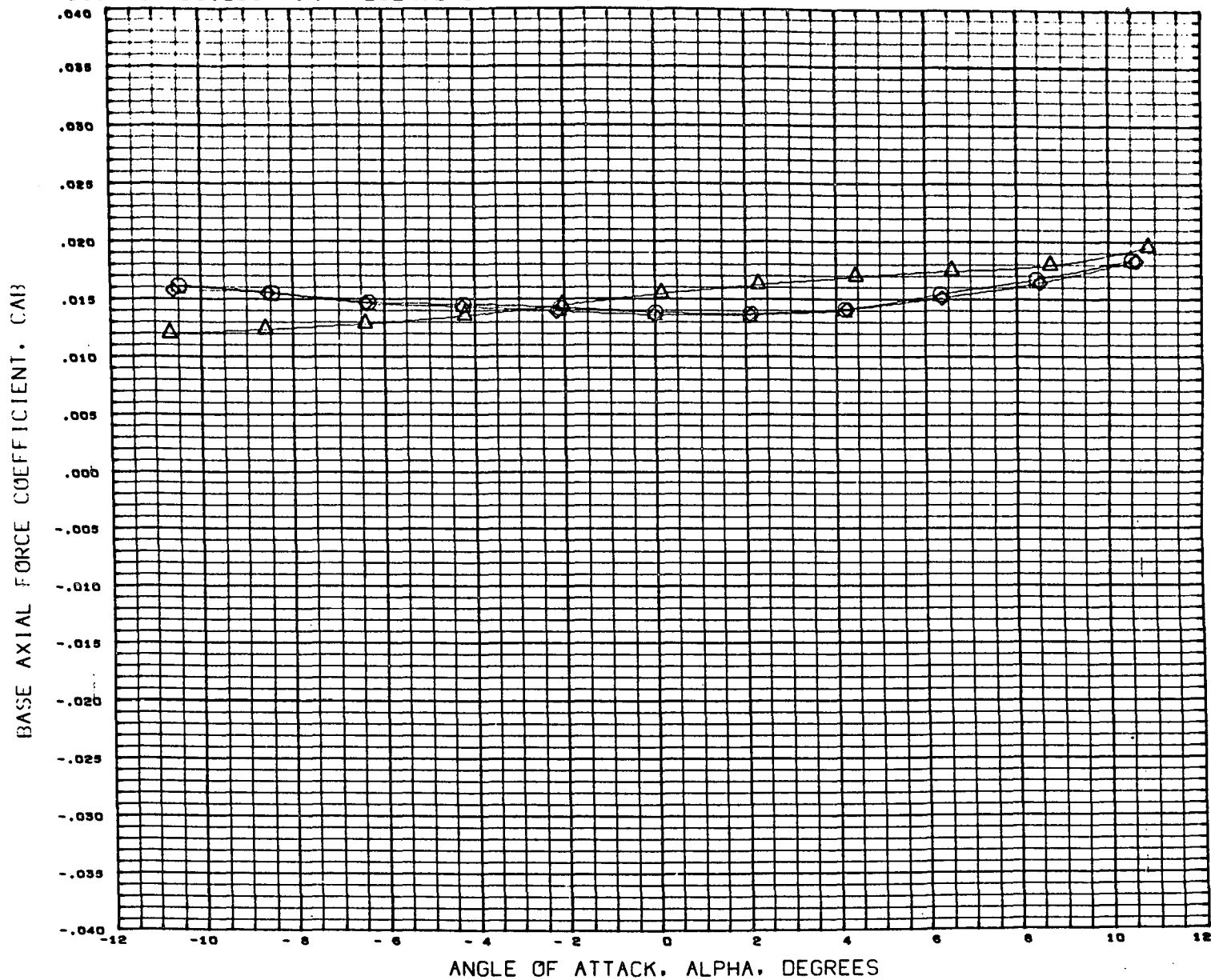
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| (H3209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H3208A) MSFC490 NR/GD LAUNCH 820+85

(H3209A) MSFC490 NR/GD LAUNCH 820W14+85

(H3212A) MSFC490 NR/GD LAUNCH 820C48+85

BETA POSITN ORBINC

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0.000 1.000 0.000

0.000 1.000 0.000

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0950 INCHES

BREF 6.0990 INCHES

XMRP 0.0000

YMRP 0.0000

ZMRP 0.0000

SCALE 0.0035 SCALE

MACH 1.469

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H3208A) MSFC490 NR/GD LAUNCH B20+B5

(H3209A) MSFC490 NR/GD LAUNCH B20W14+B5

(H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5

BETA POSITN ORBINC

0.000 1.000 0.000

0.000 1.000 0.000

0.000 1.000 0.000

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0950 INCHES

BREF 6.0990 INCHES

XMRP 0.0000

YMRP 0.0000

ZMRP 0.0000

SCALE 0.0035 SCALE

MACH 1.958

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE, CLMAID (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

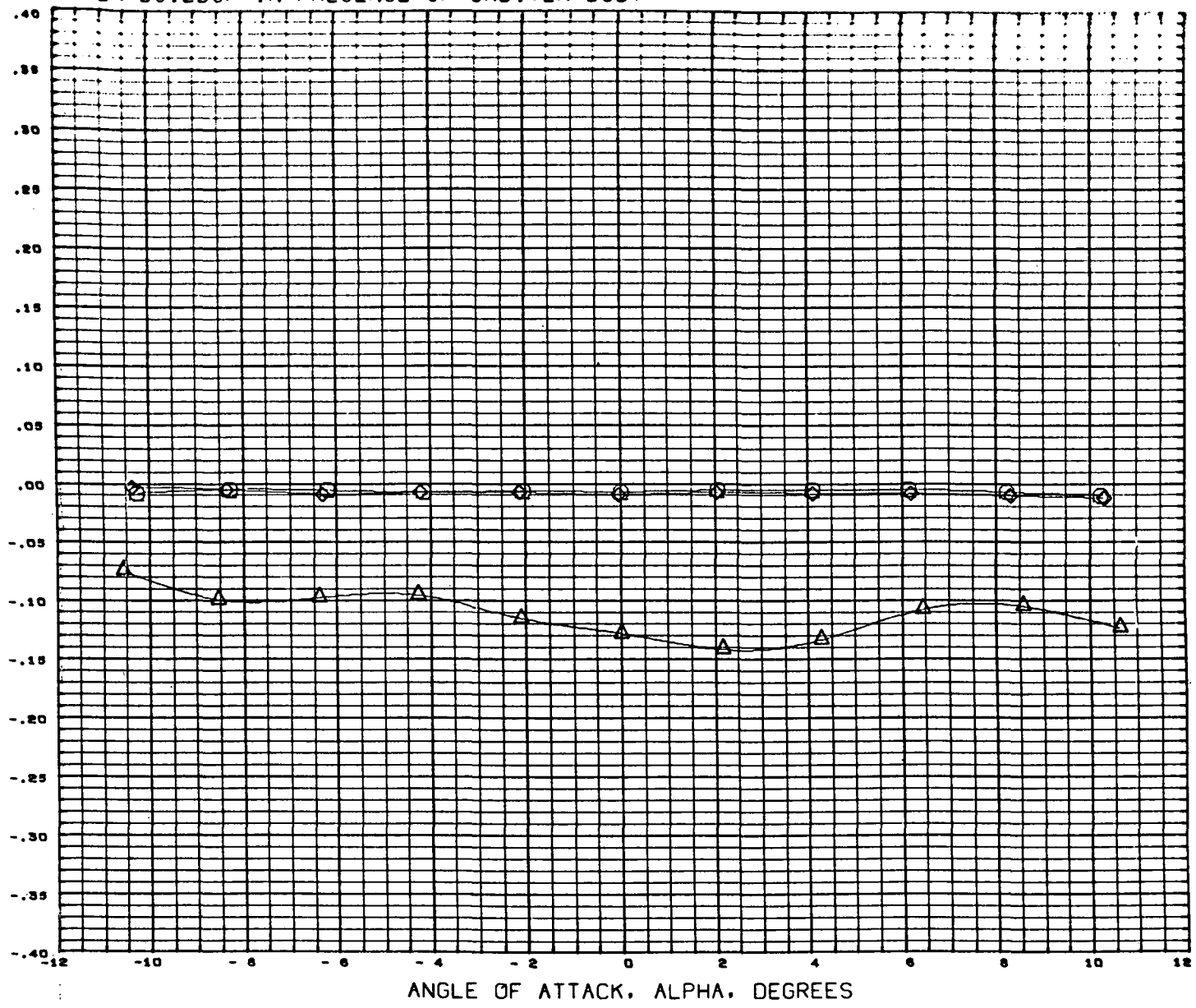
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|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.599

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|----------|--------|--------------------------------|
| (13208A) | ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (13209A) | △ | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13212A) | ◇ | MSFC490 NR/GD LAUNCH B20C4B+B5 |

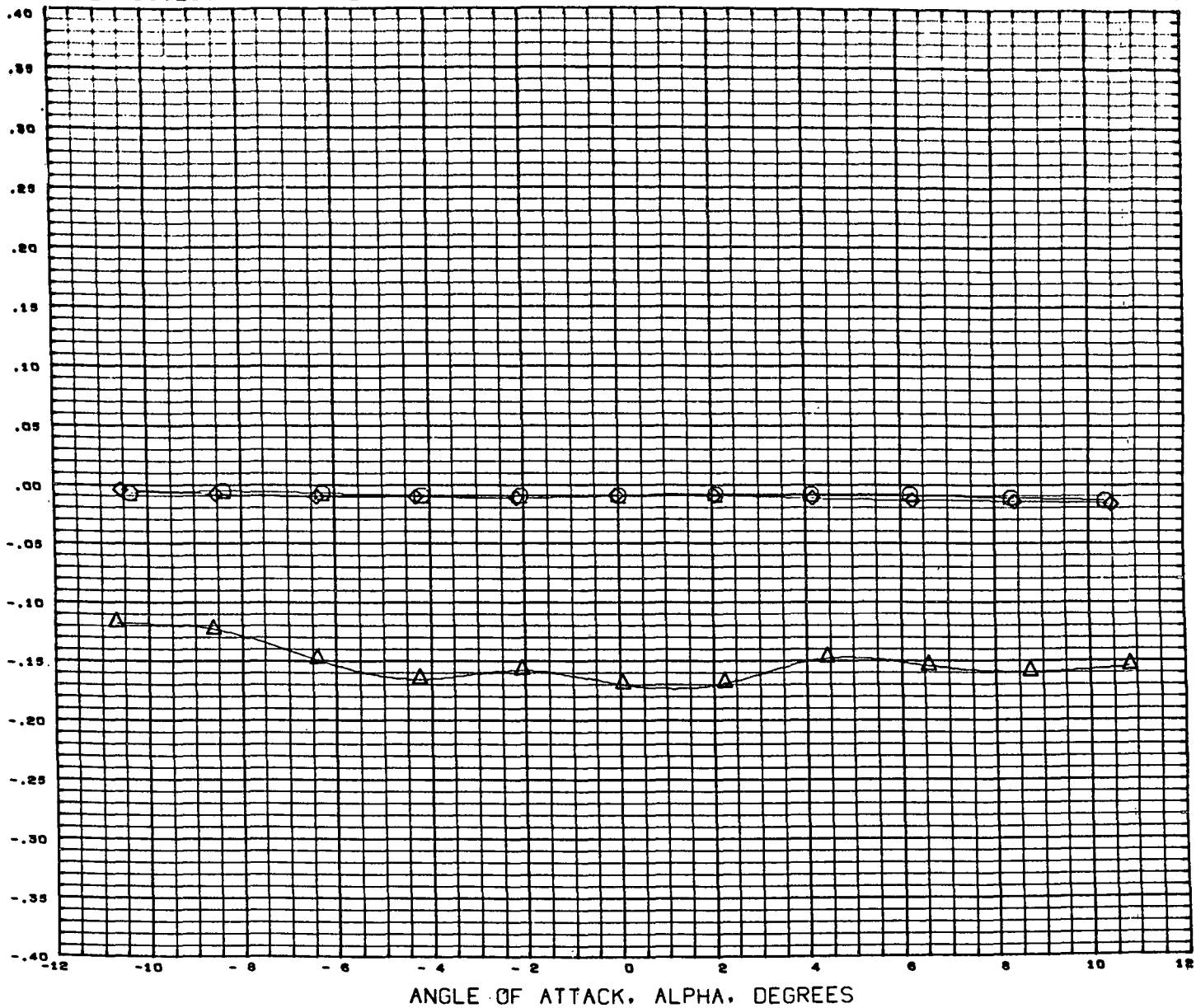
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.697

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE (ALMALP (PER DEGREE))

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

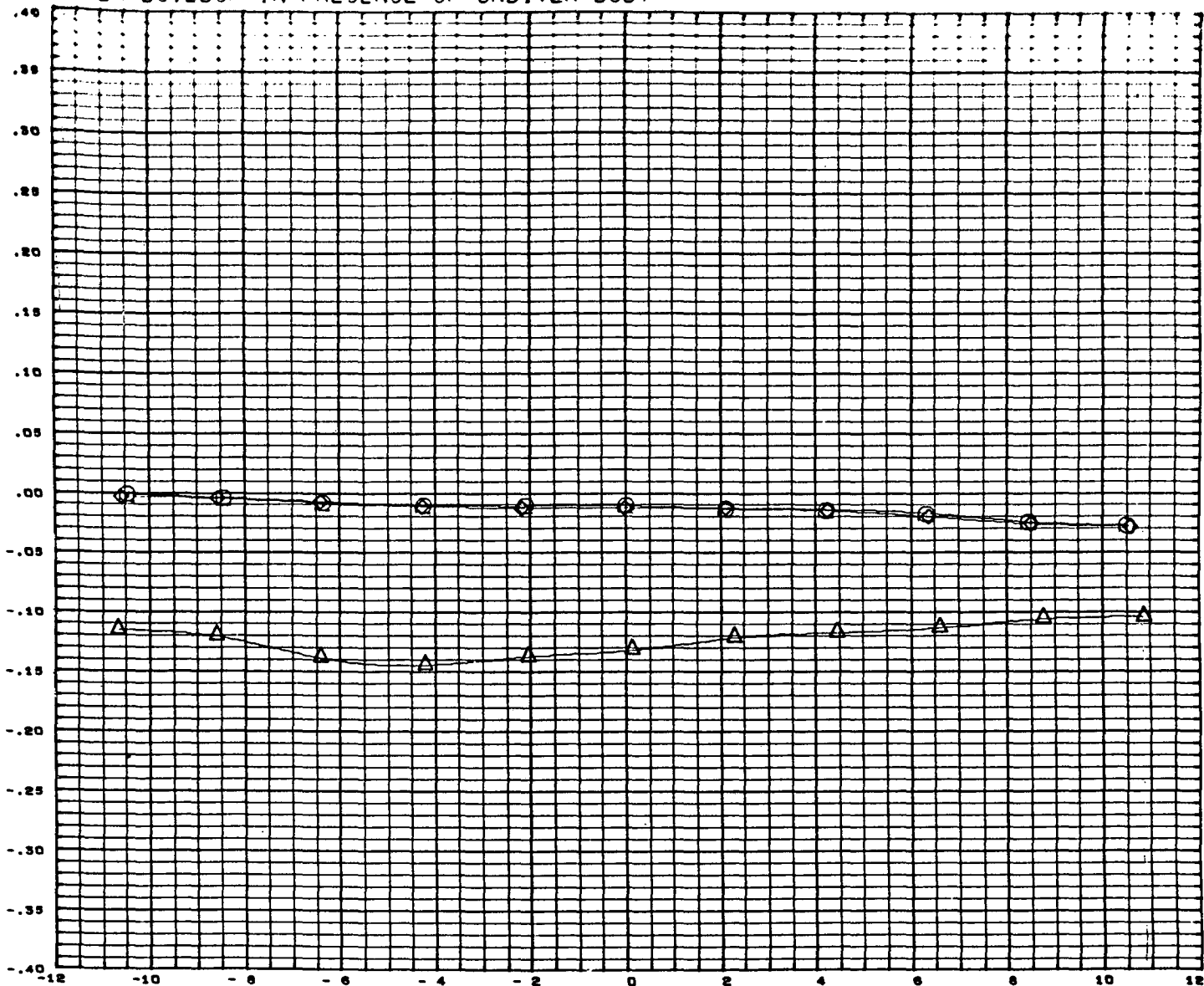
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE, CLMADP (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13208A) MSFC490 NR/GD LAUNCH B20+B5
 (13209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (13212A) MSFC490 NR/GD LAUNCH B20C4B+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 0.000 1.000 0.000
 0.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.469

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALT (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

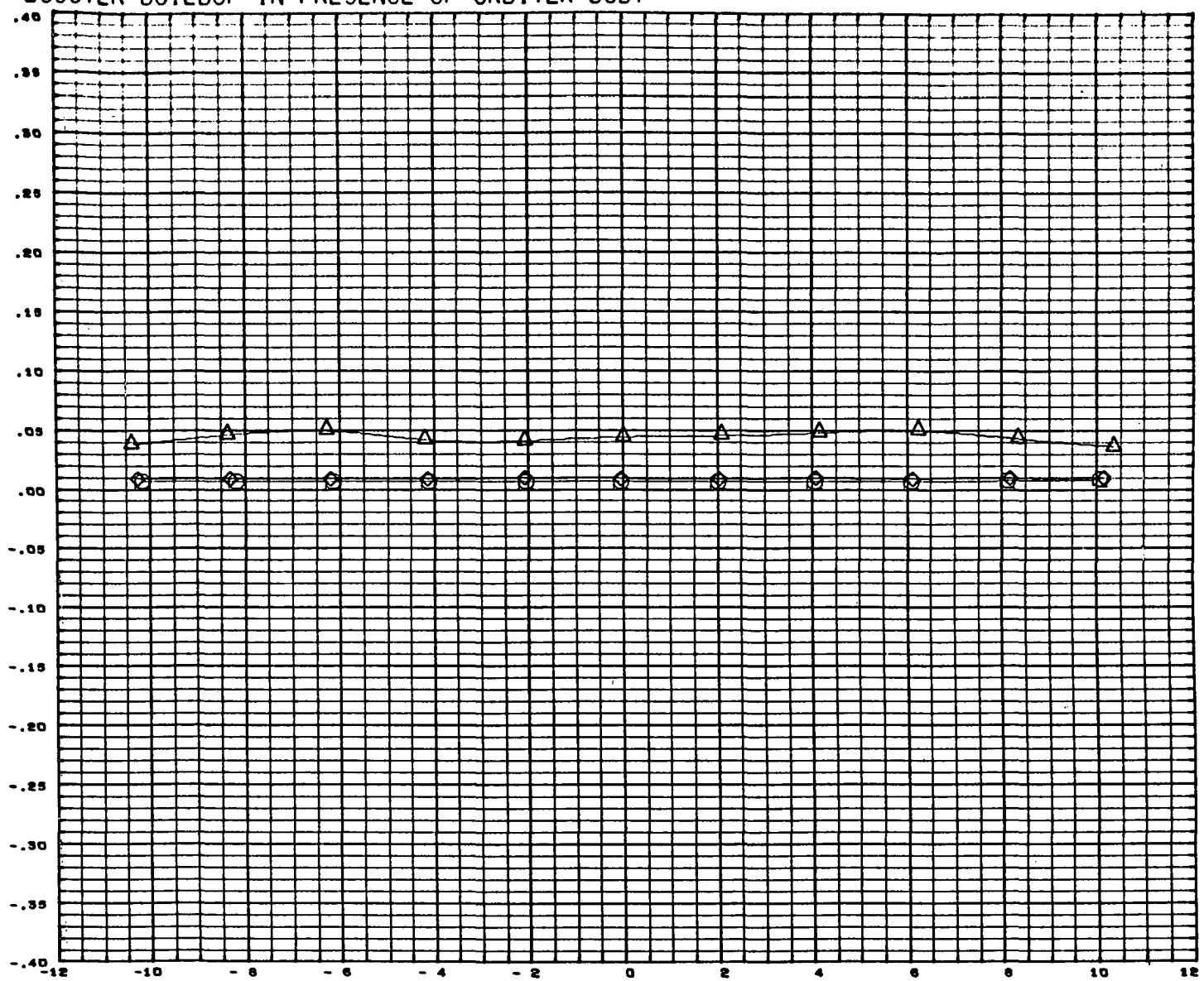
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|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.958

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

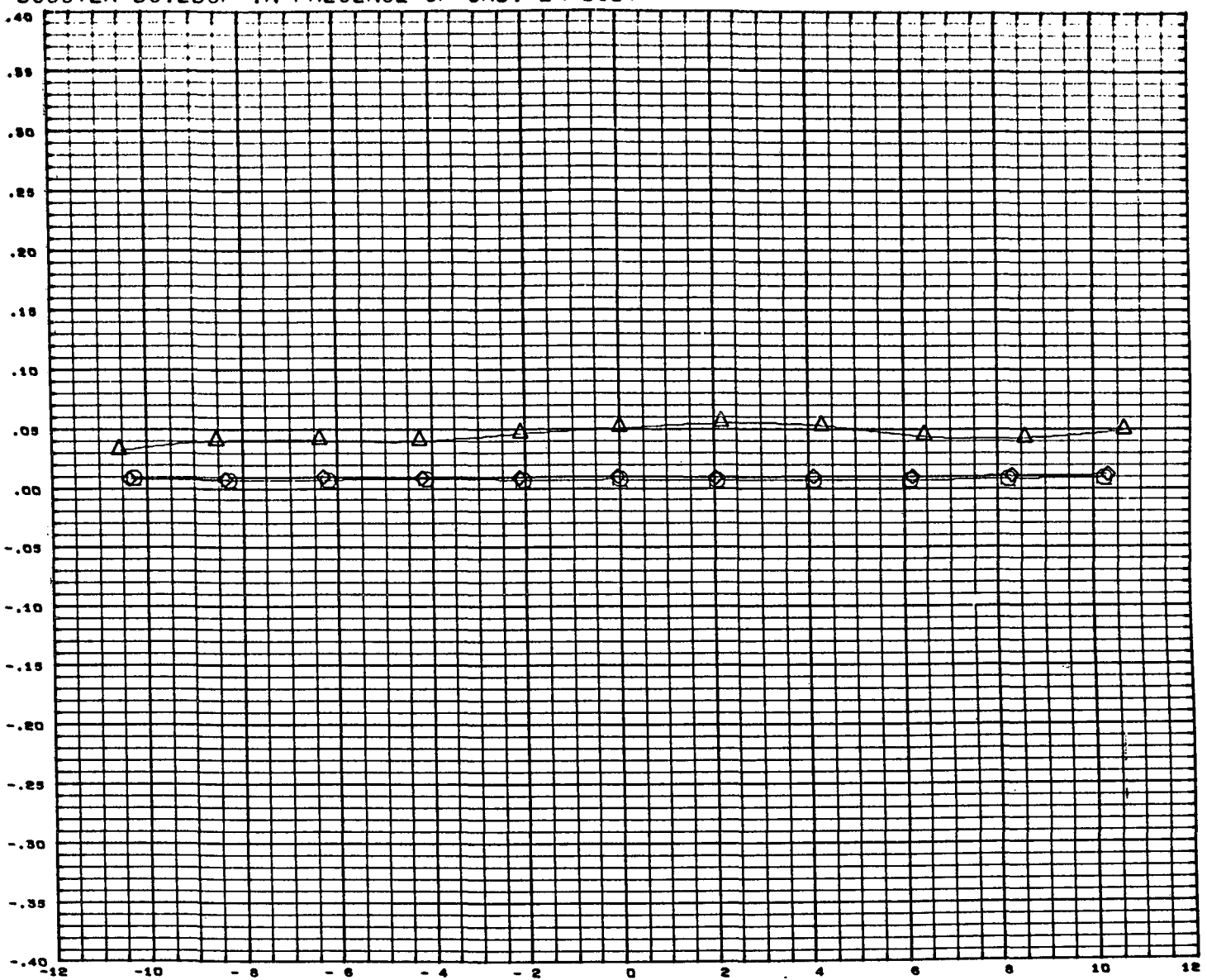
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|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 0.599

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNAIPH (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13212A) | MSFC490 NR/GD LAUNCH B20C48+B5 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|----------|--------|--------------------------------|
| (13208A) | ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (13209A) | △ | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13212A) | ◇ | MSFC490 NR/GD LAUNCH B20C4B+B5 |

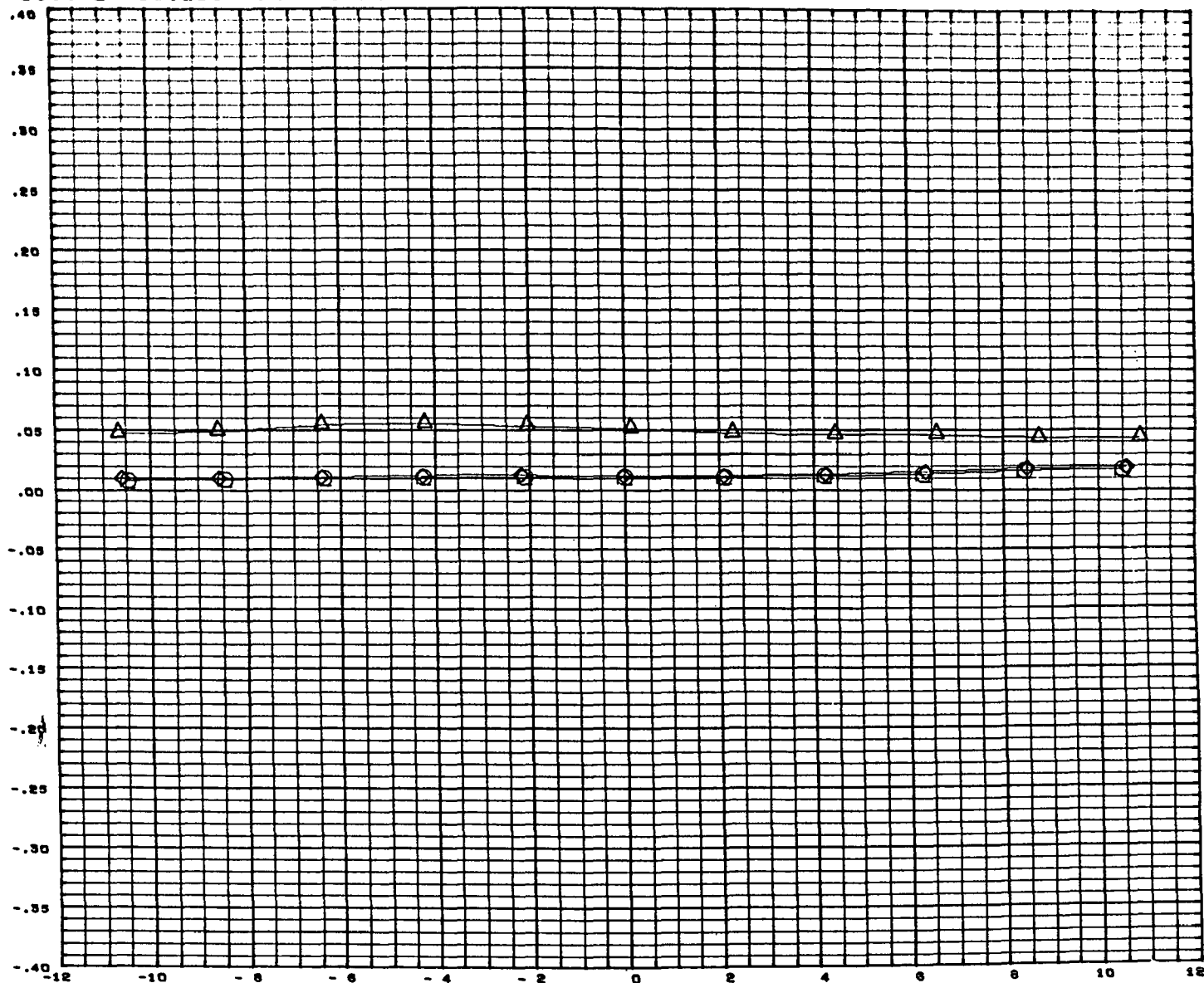
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|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| BREF | 6.0990 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

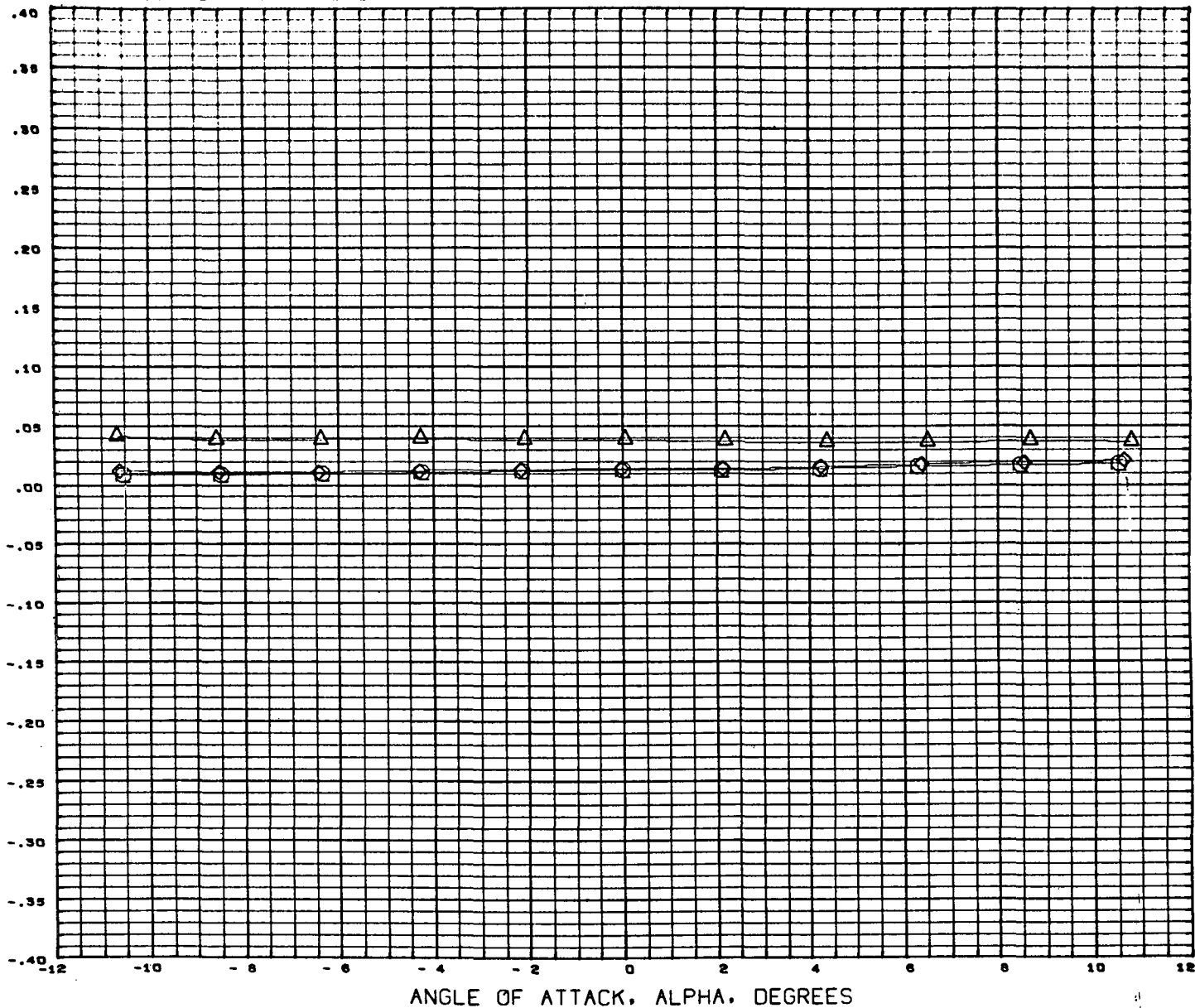
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|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0950 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.469

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

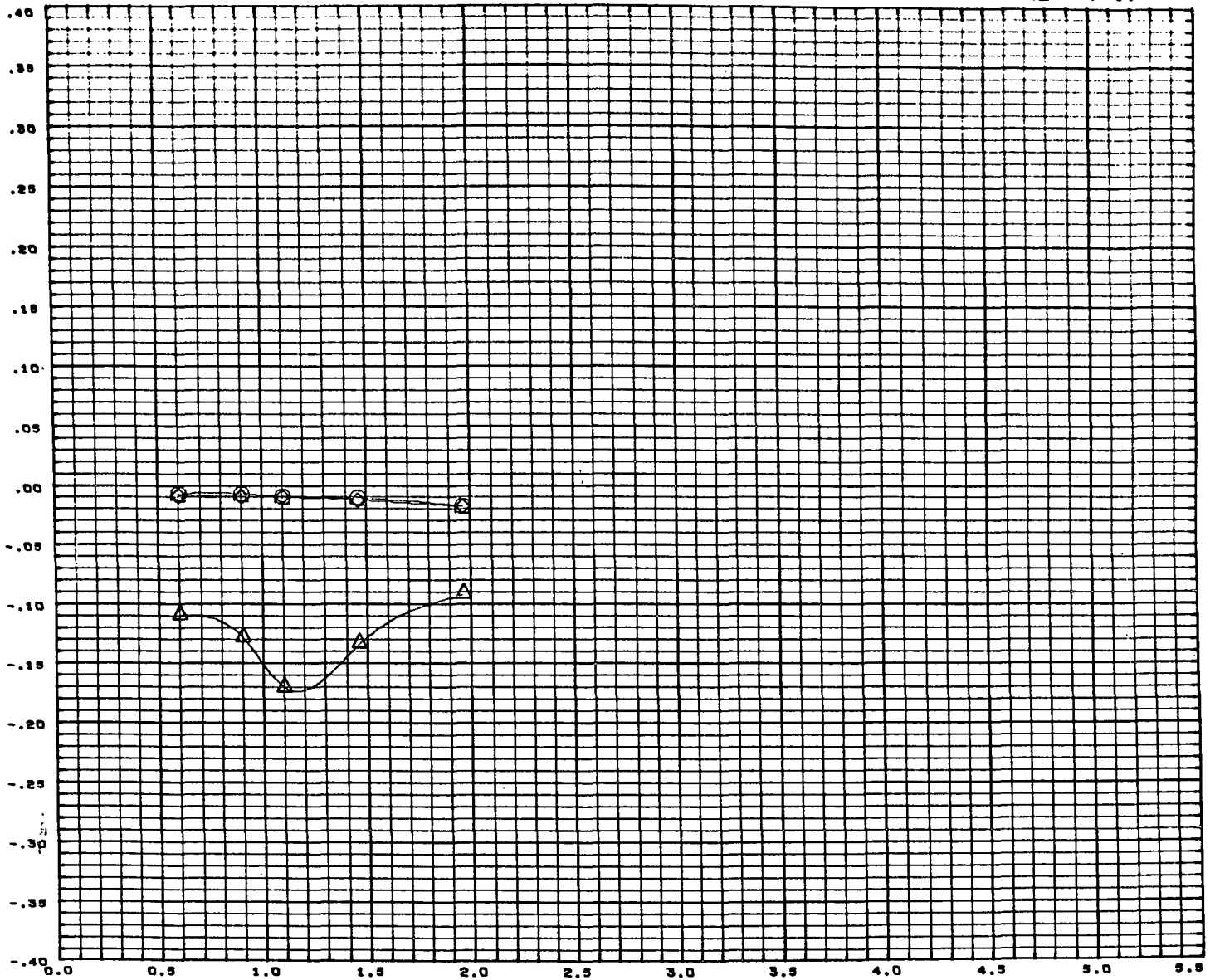
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| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.958

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAMP (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY

ALPHA=0.



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(J3208A) MSFC490 NR/GD LAUNCH B20+B5
(J3209A) MSFC490 NR/GD LAUNCH B20W14+B5
(J3212A) MSFC490 NR/GD LAUNCH B20C4B+B5

BETA POSITN ORBINC
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0.000 1.000 0.000
0.000 1.000 0.000

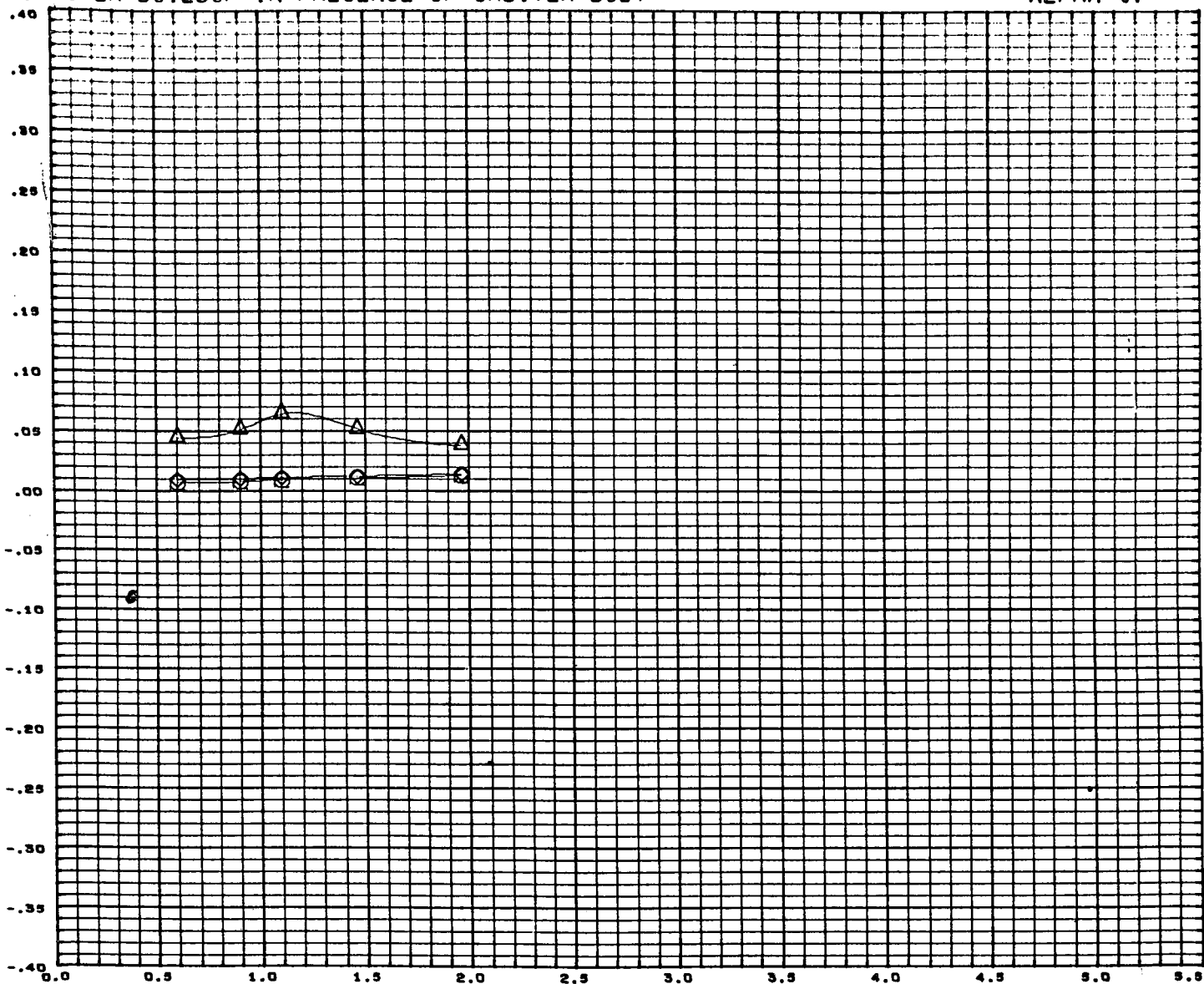
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YMRP 0.0000
ZMRP 0.0000
SCALE 0.0035 SCALE

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY

ALPHA=0.

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (J3208A) ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (J3209A) △ | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (J3212A) ◇ | MSFC490 NR/GD LAUNCH B20C4B+B5 |

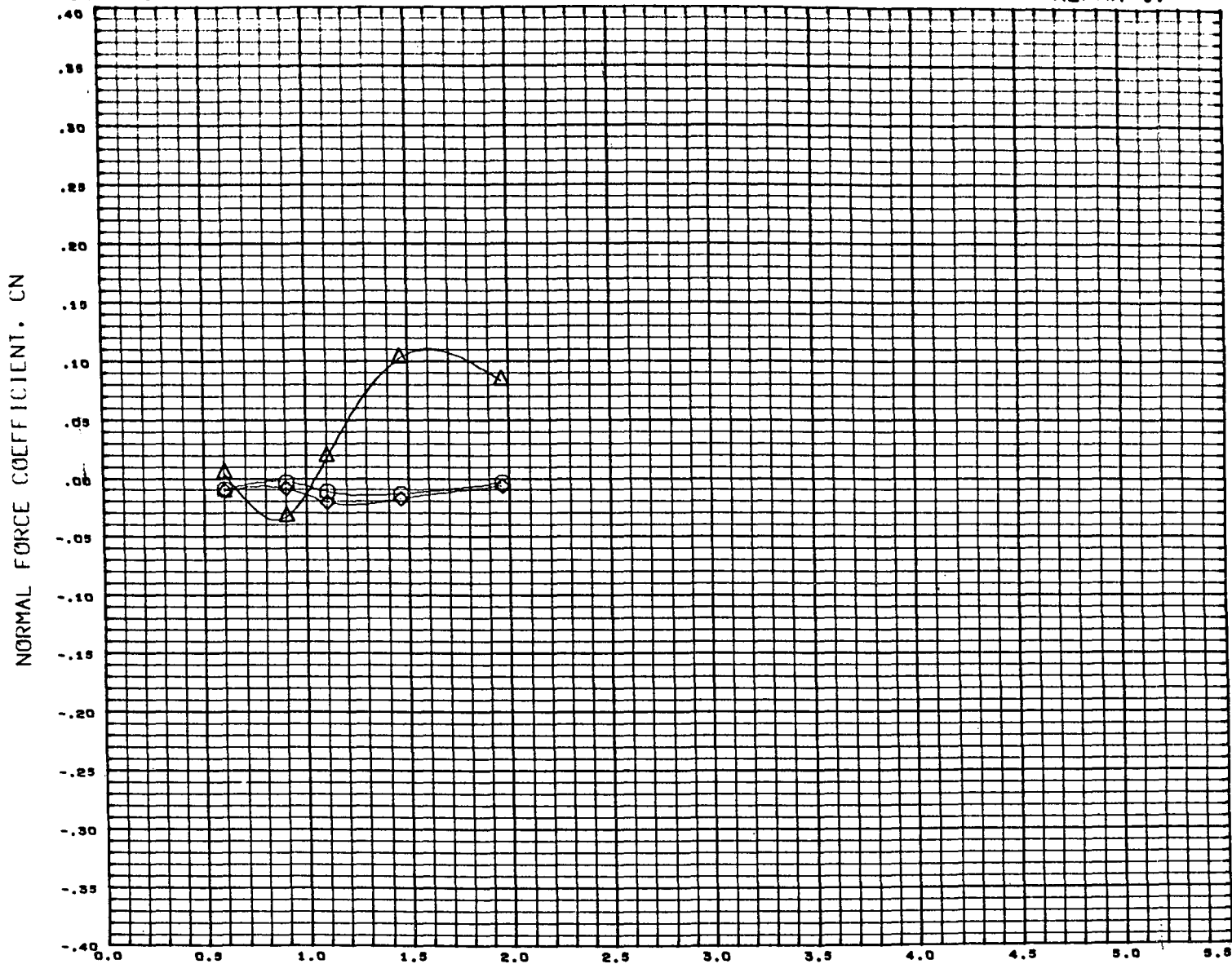
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY

ALPHA=0.



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(K3208A) MSFC490 NR/GD LAUNCH B20+B5
(K3209A) MSFC490 NR/GD LAUNCH B20W14+B5
(K3212A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

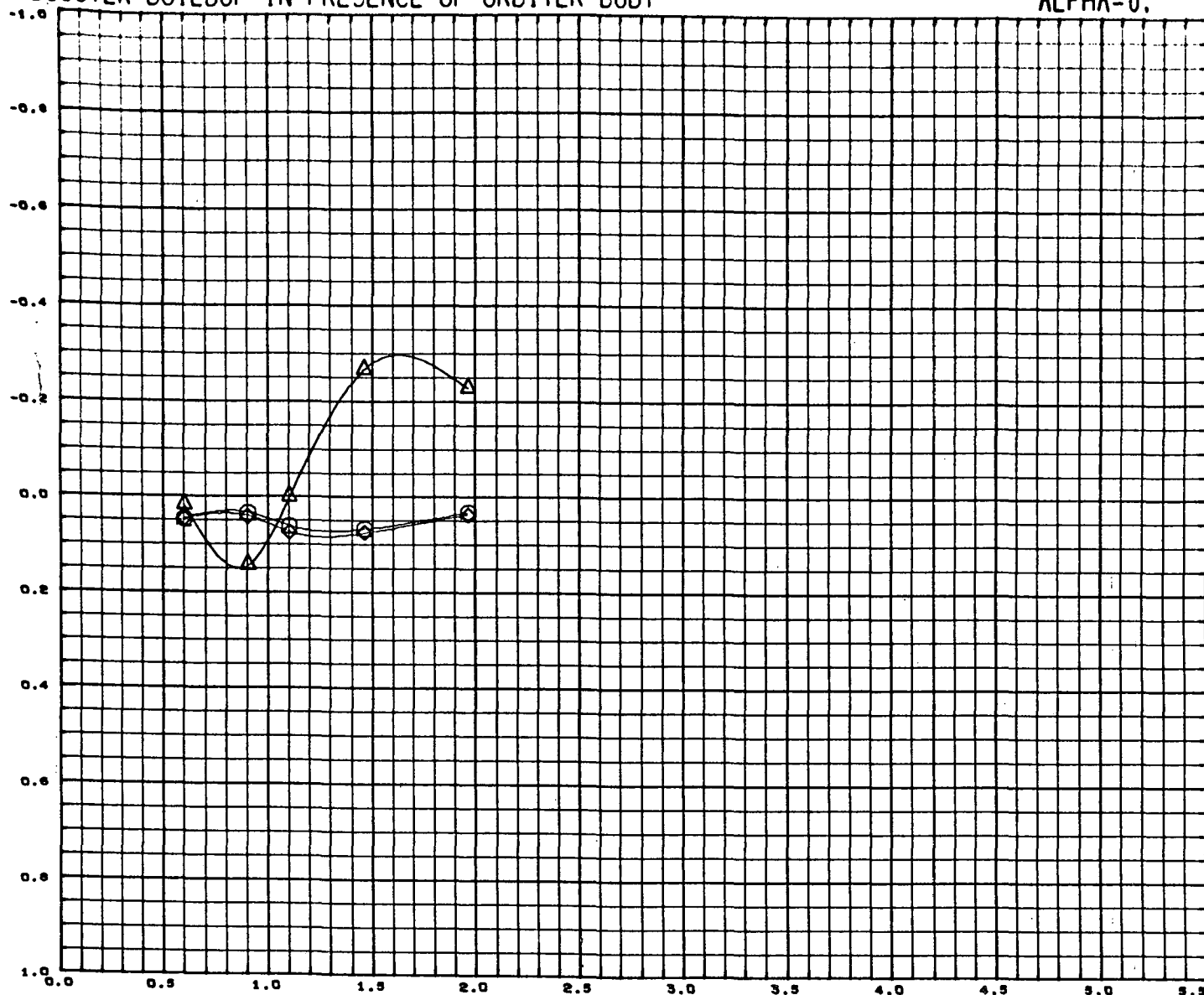
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|-----------------------|---------------|
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| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY

ALPHA=0.

PITCHING MOMENT COEFFICIENT, CLM



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (K3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (K3209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (K3212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

ALPHA 0.000

MACH NUMBER

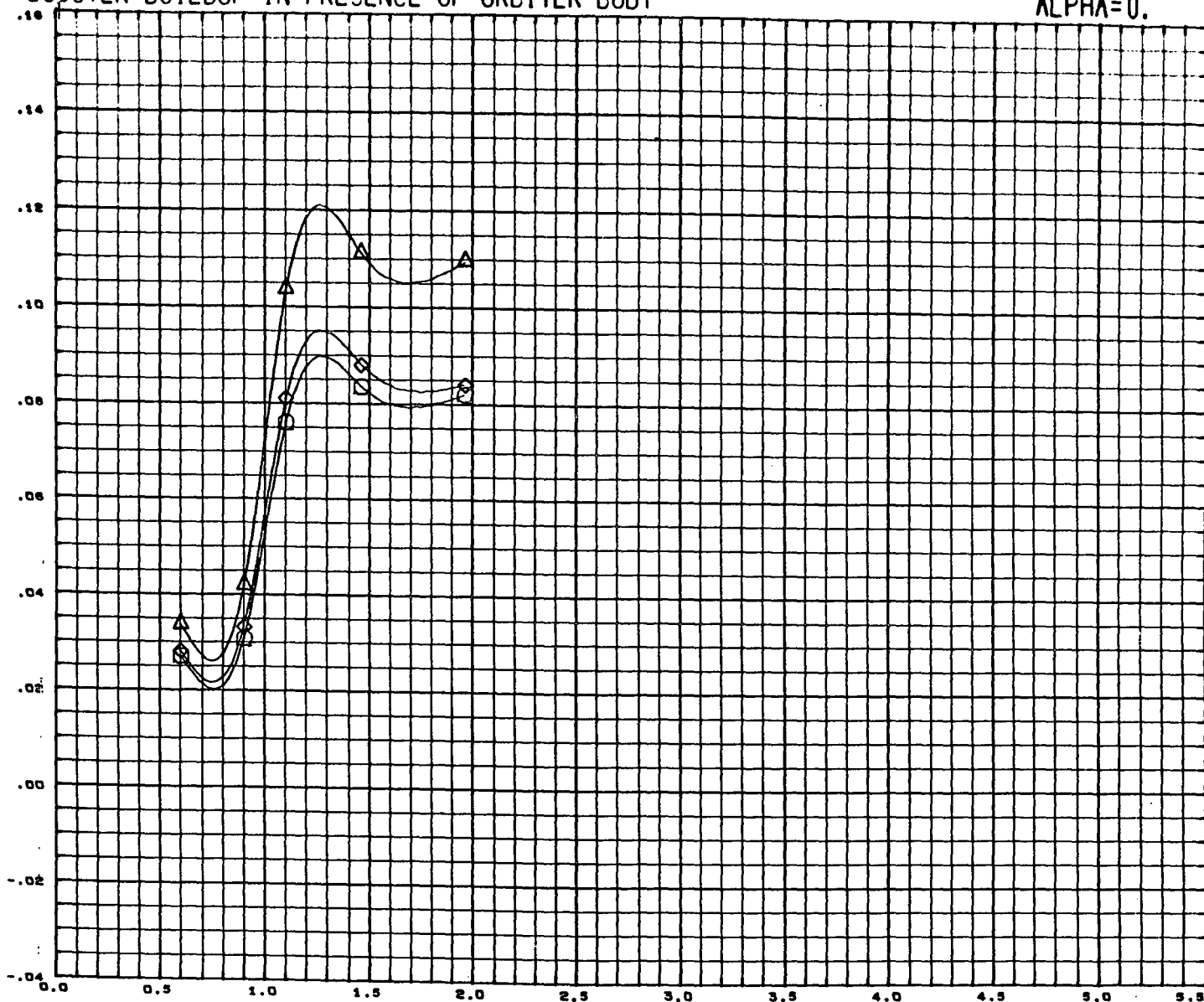
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | sq IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



MACH NUMBER

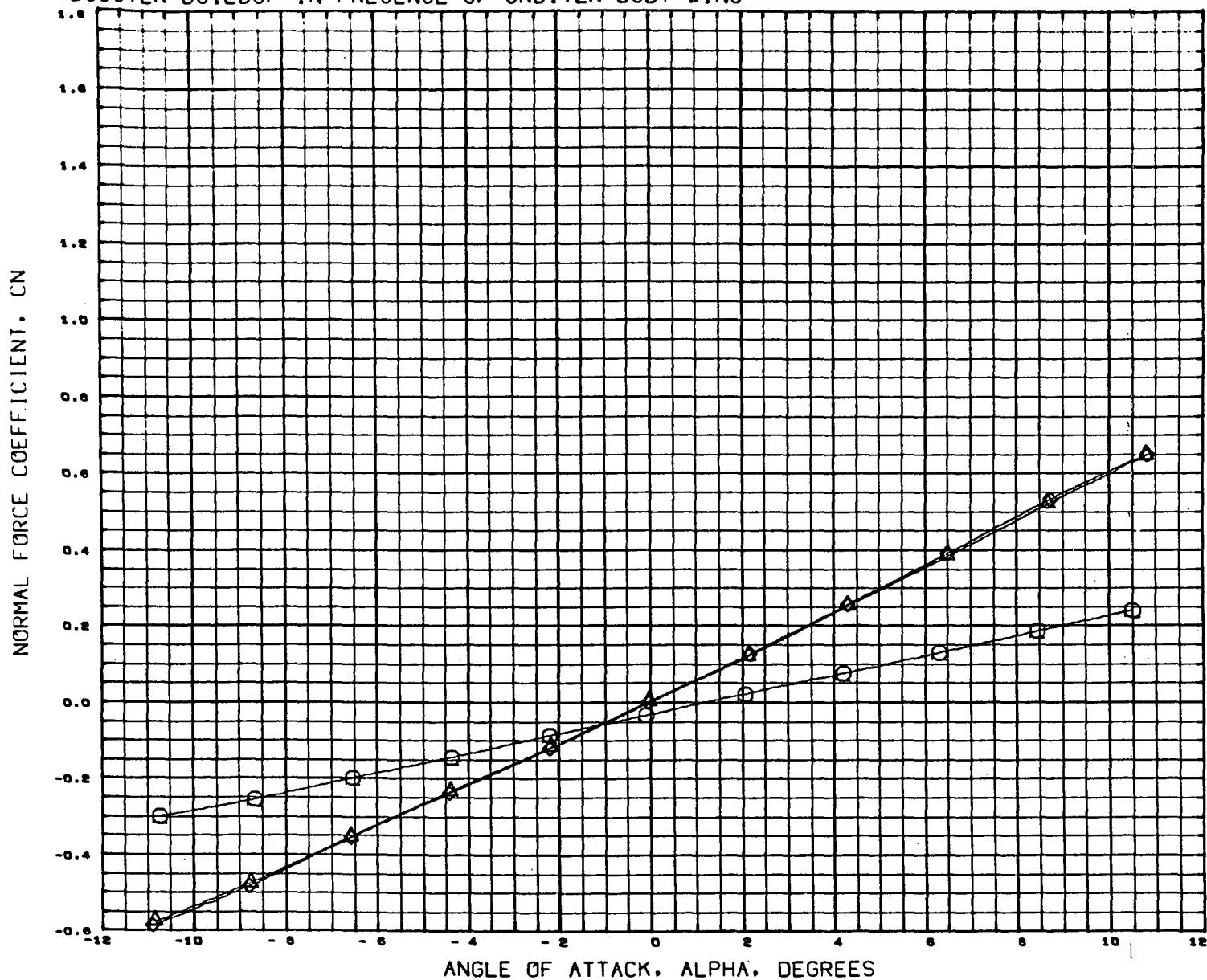
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|-----------------|--------------------------------|
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| (K3209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (K3212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



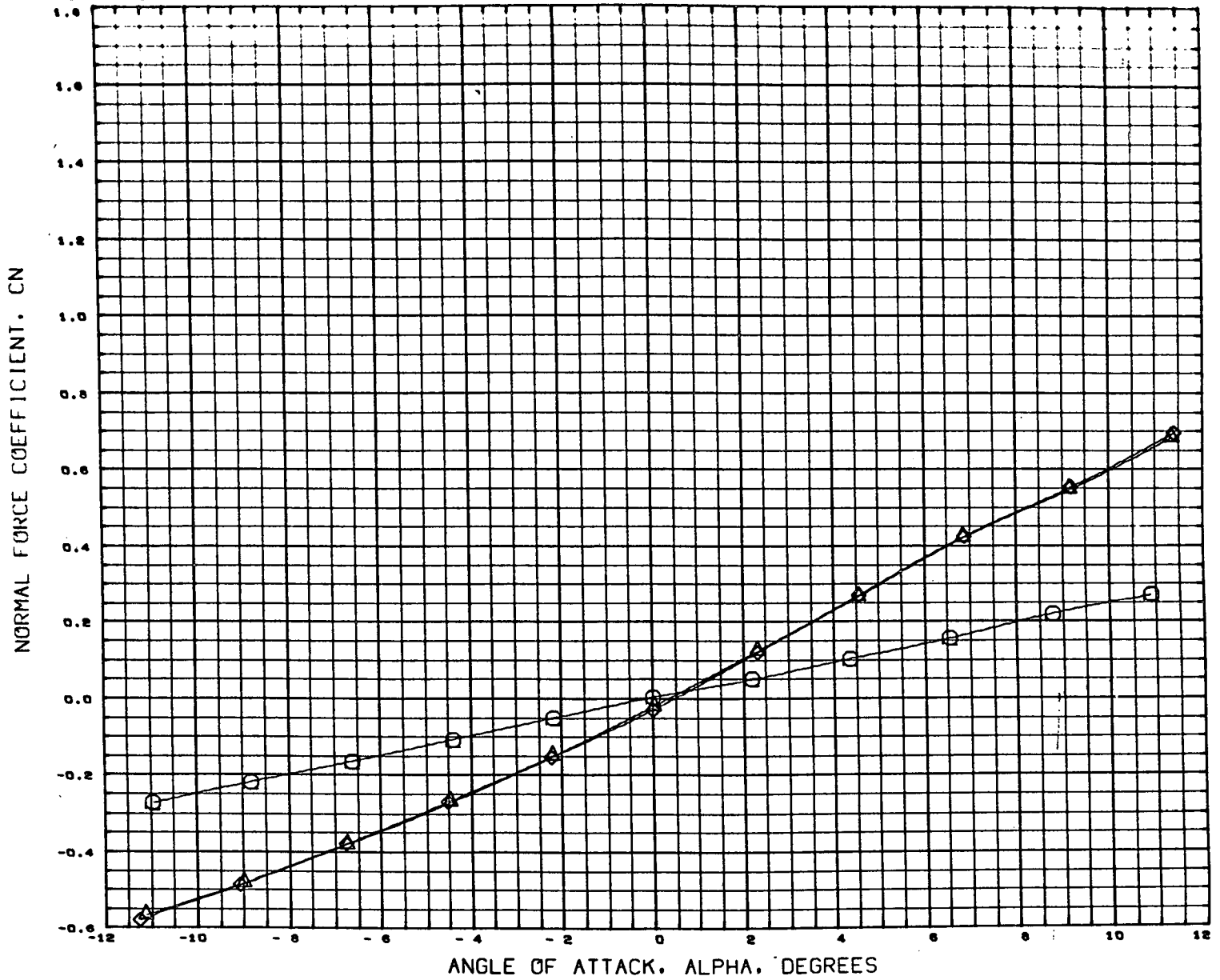
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|----------------------|--------------------------------------|
| (H3213A) \square | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3210A) \triangle | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) \diamond | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
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| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
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| SCALE | 0.0035 SCALE |

MACH 0.602

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



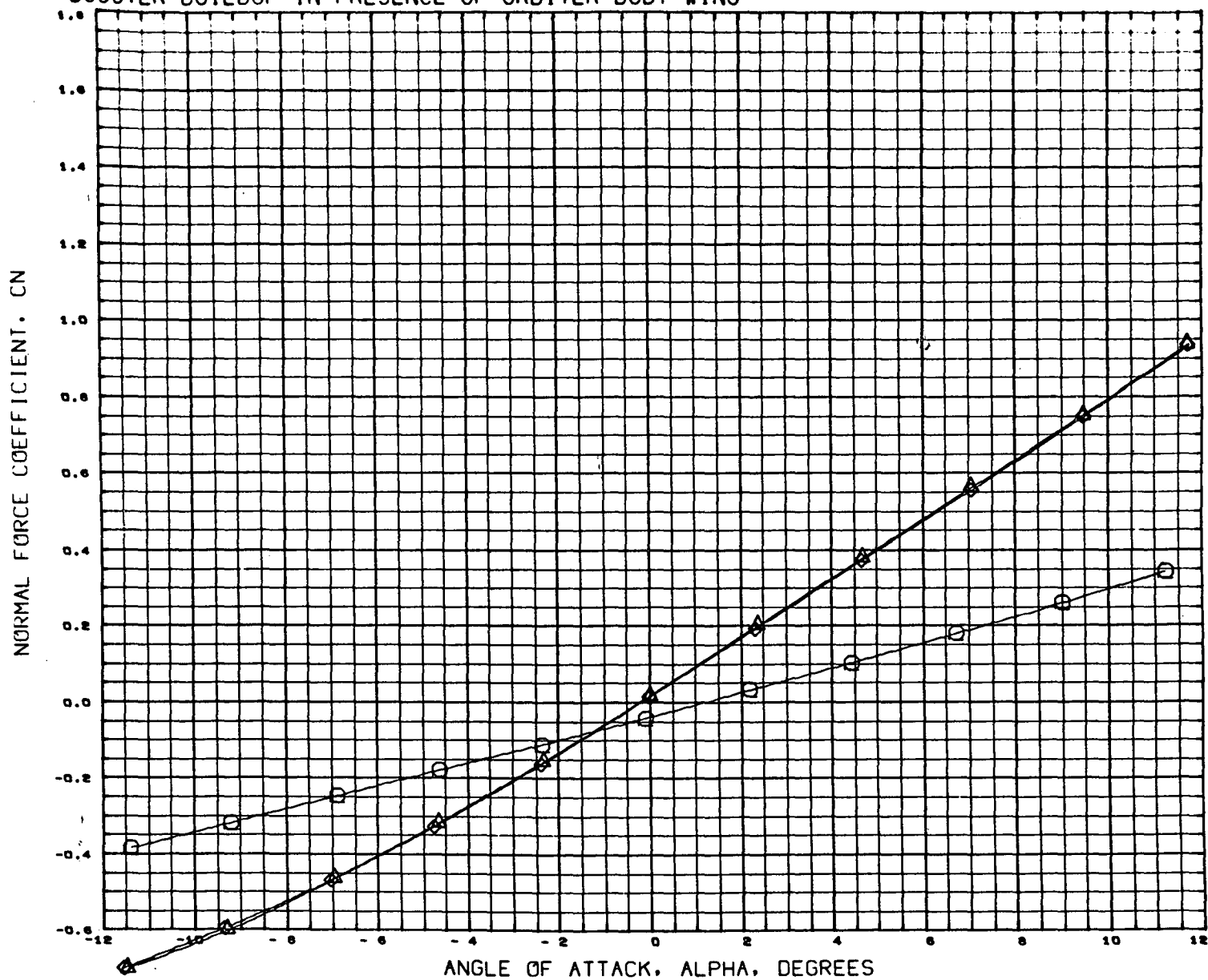
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| (H3210A) △ | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
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| SCALE | 0.0035 | SCALE |

MACH 0.899

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



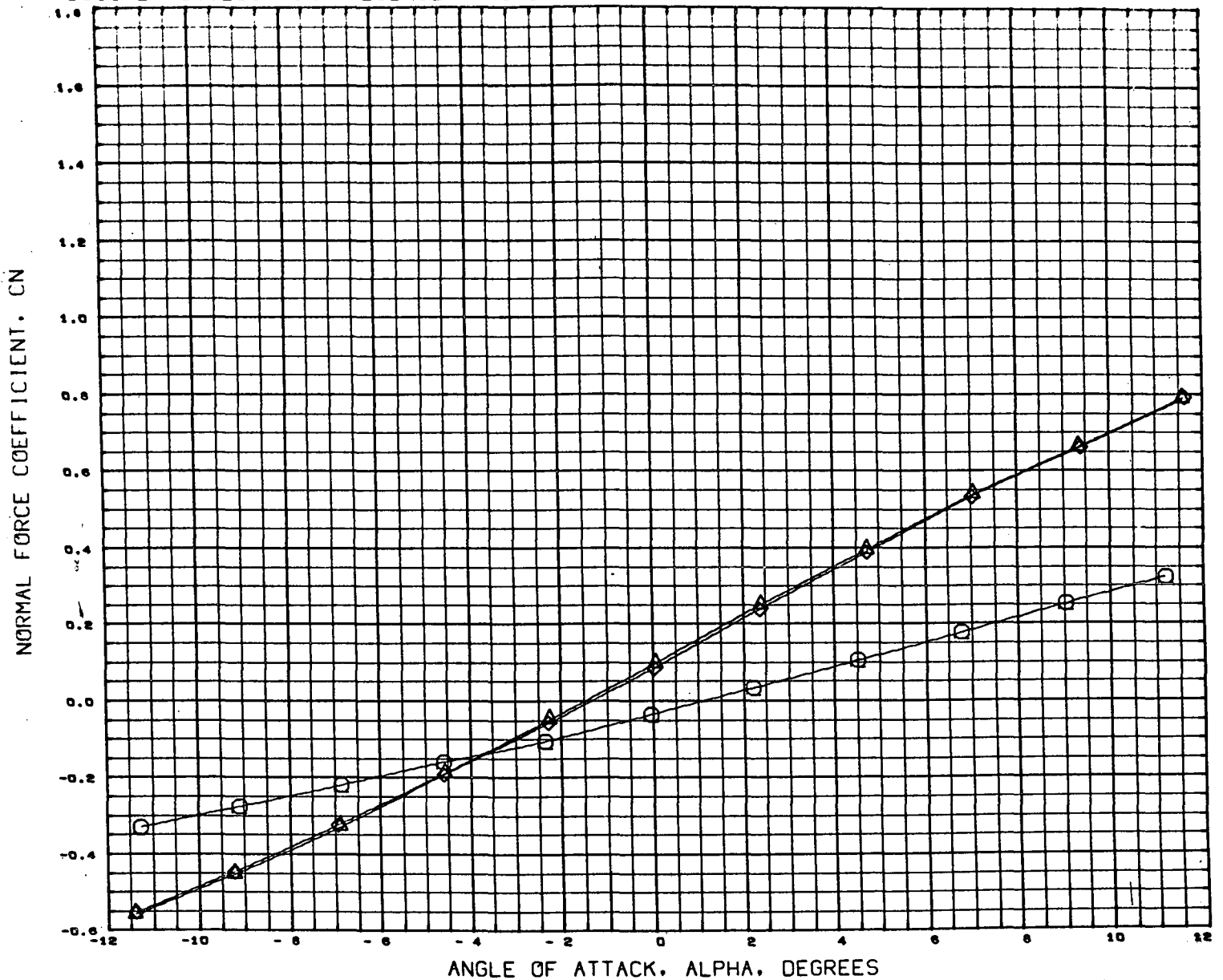
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
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| BETA | ELVORB |
|-------|--------|
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| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| SCALE | 0.0035 | SCALE |

MACH 1.098

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



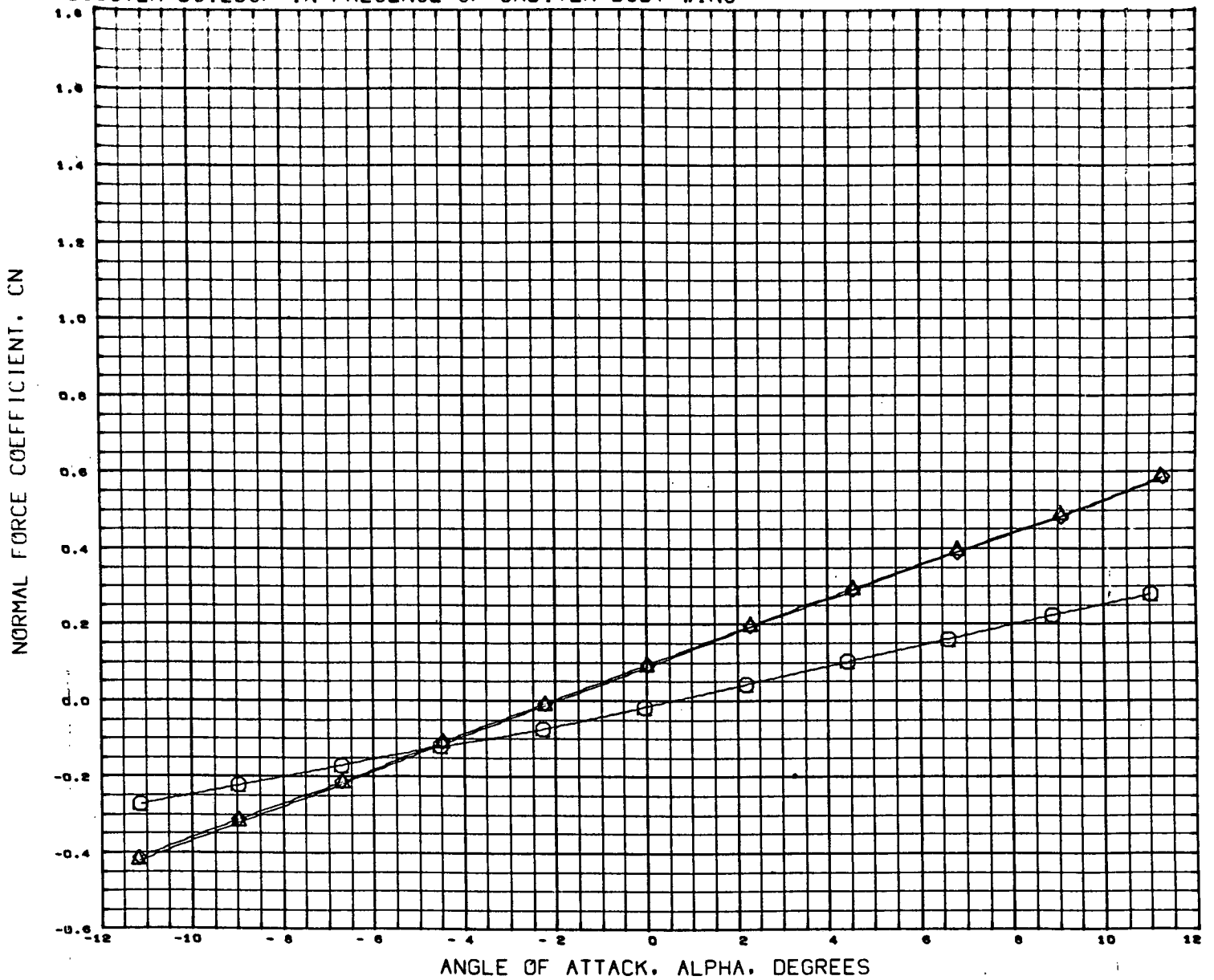
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
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| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.470

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---------------------------------------|
| (H3213A) ○ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3210A) △ | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) ◇ | MSFC490 NR/GD LAUNCH B20C4B5W14+B5W17 |

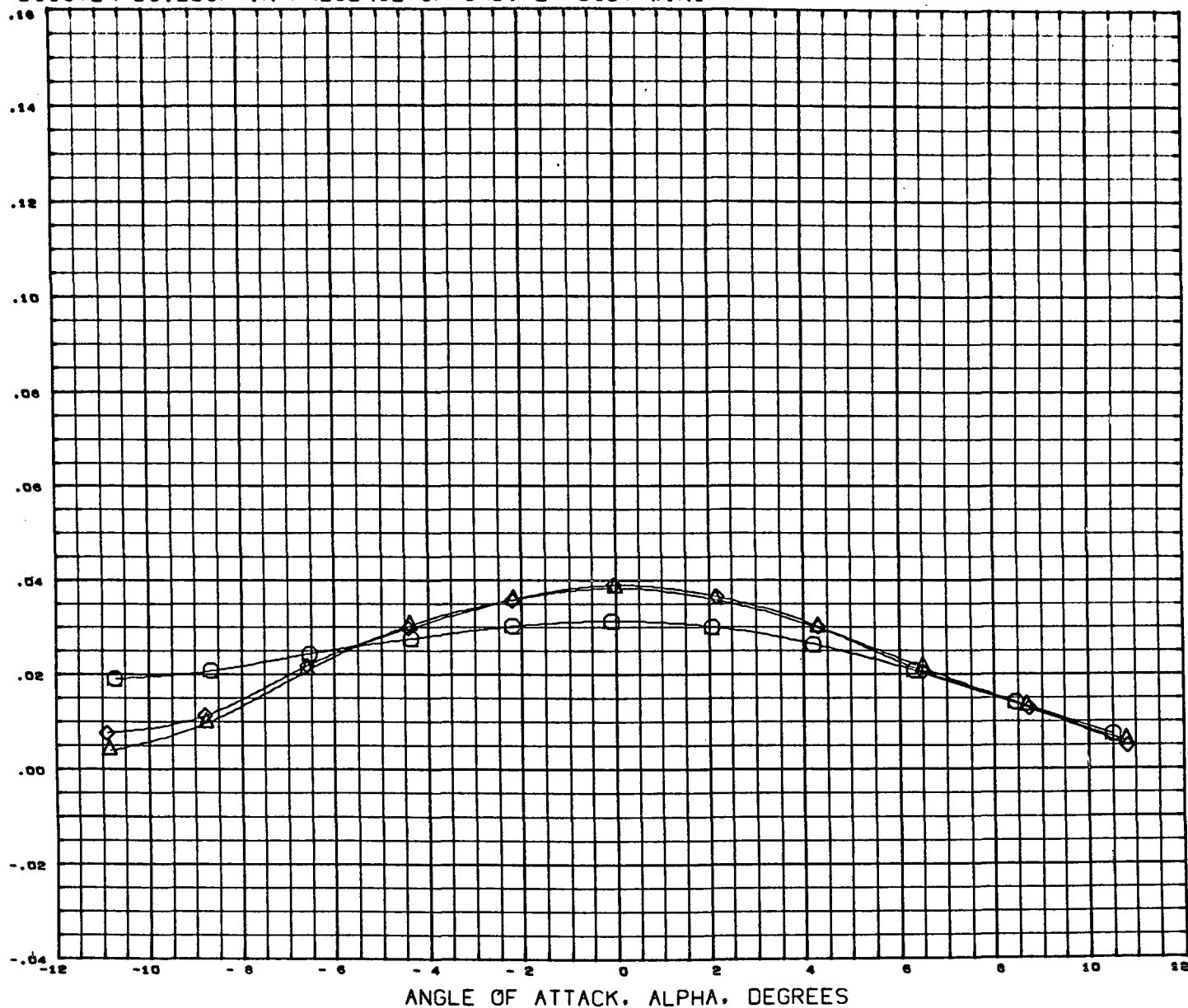
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| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.955

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

FOREBODY AXIAL FORCE COEFFICIENT, CAF



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

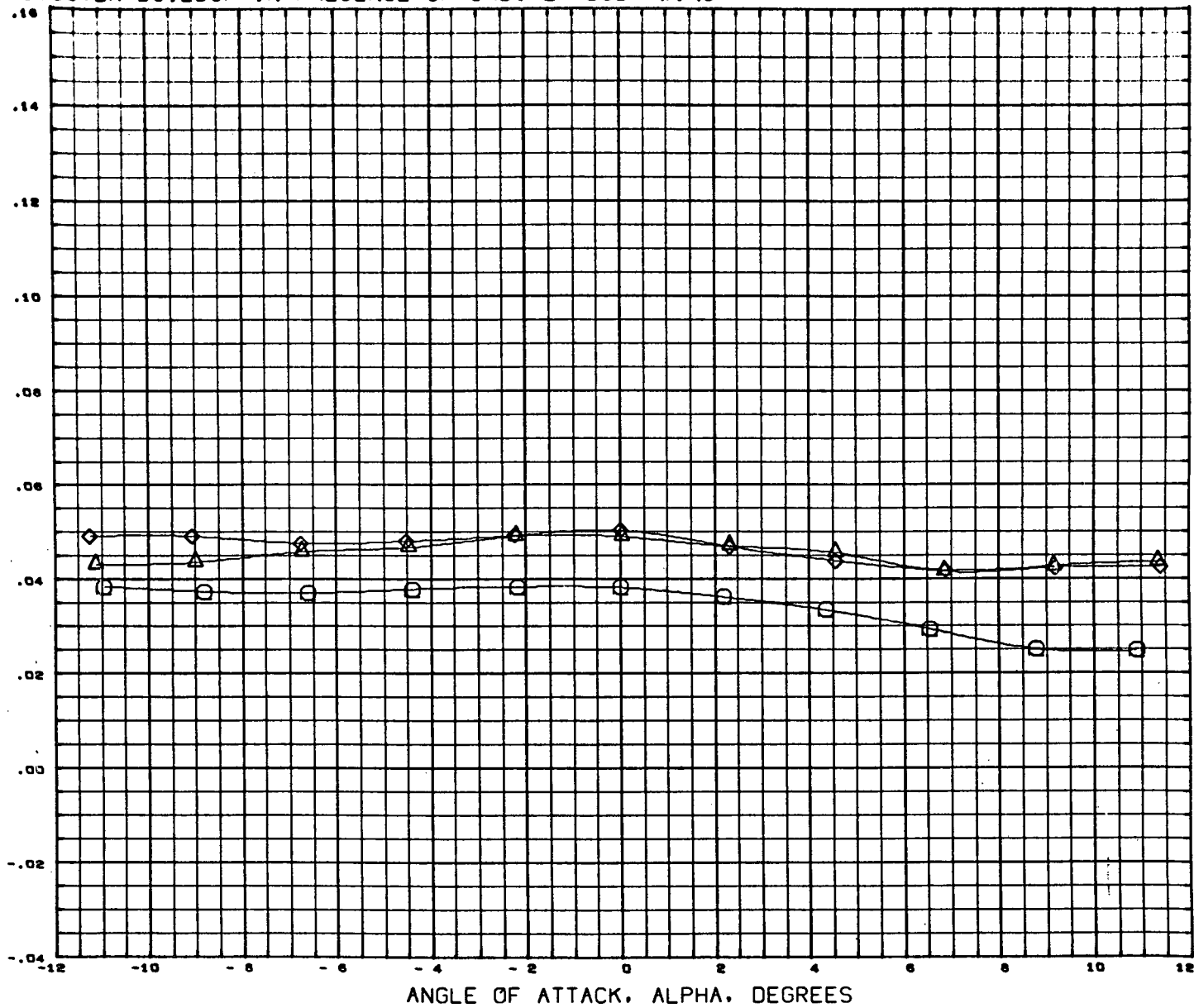
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| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| BREF | 6.0990 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.602

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



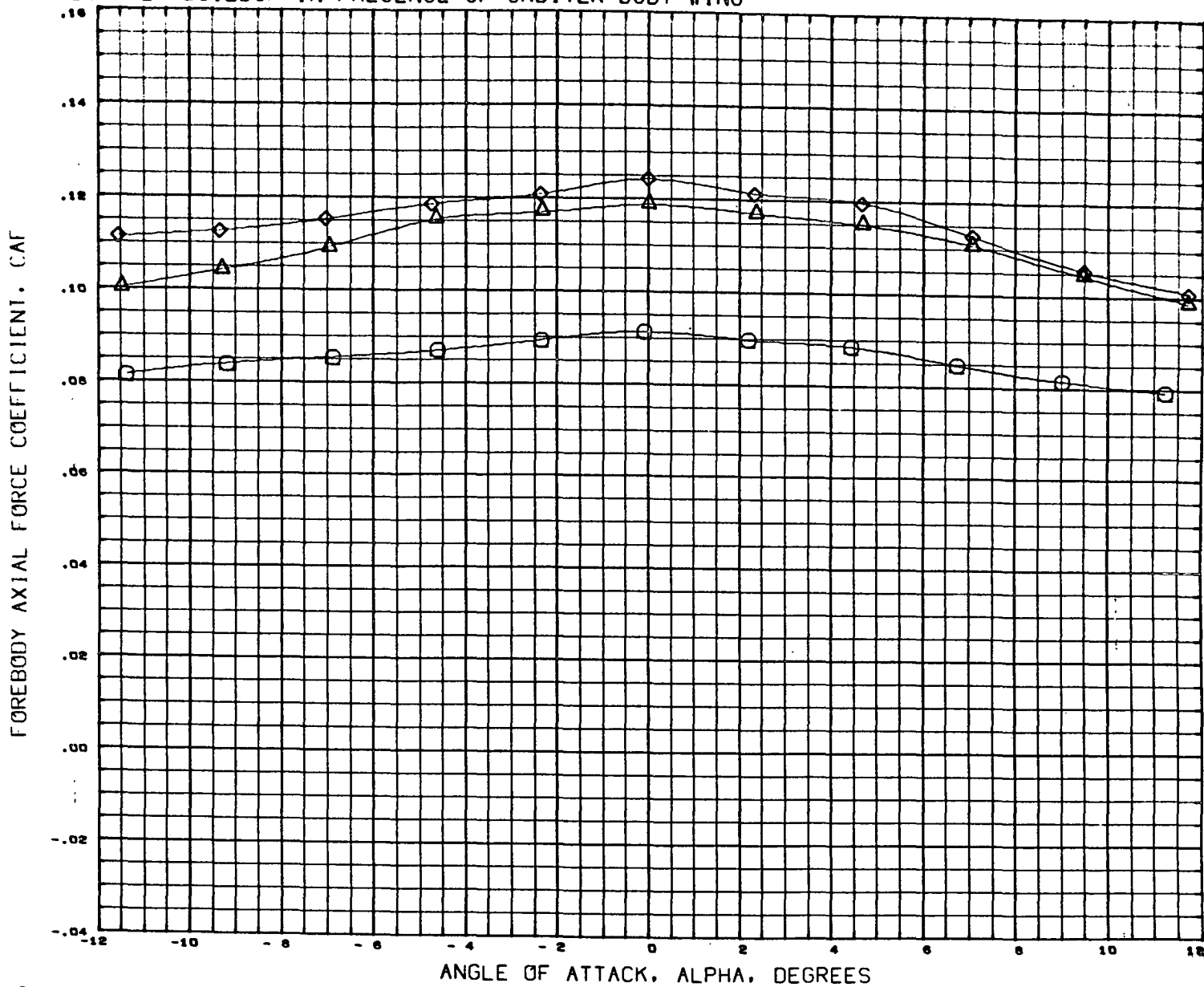
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| (H3210A) | △ | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.899

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



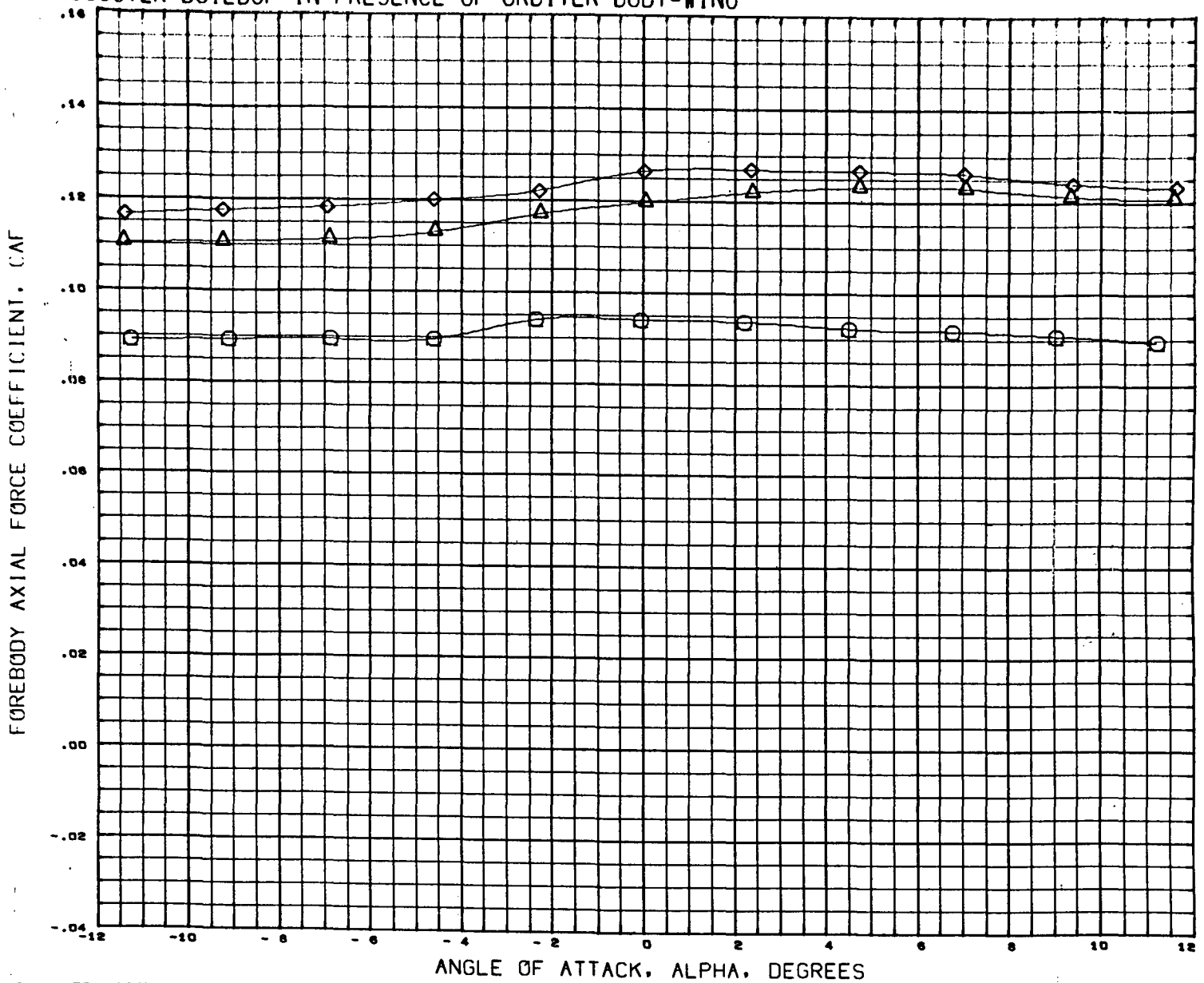
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
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| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.096

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H3213A) ○ MSFC490 NR/GD LAUNCH B20+B5W17

(H3210A) △ MSFC490 NR/GD LAUNCH B20W14+B5W17

(H3211A) ◇ MSFC490 NR/GD LAUNCH B20C4BW14+B5W17

BETA ELVORB

0.000 0.000

0.000 0.000

0.000 0.000

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0950 INCHES

BREF 6.0990 INCHES

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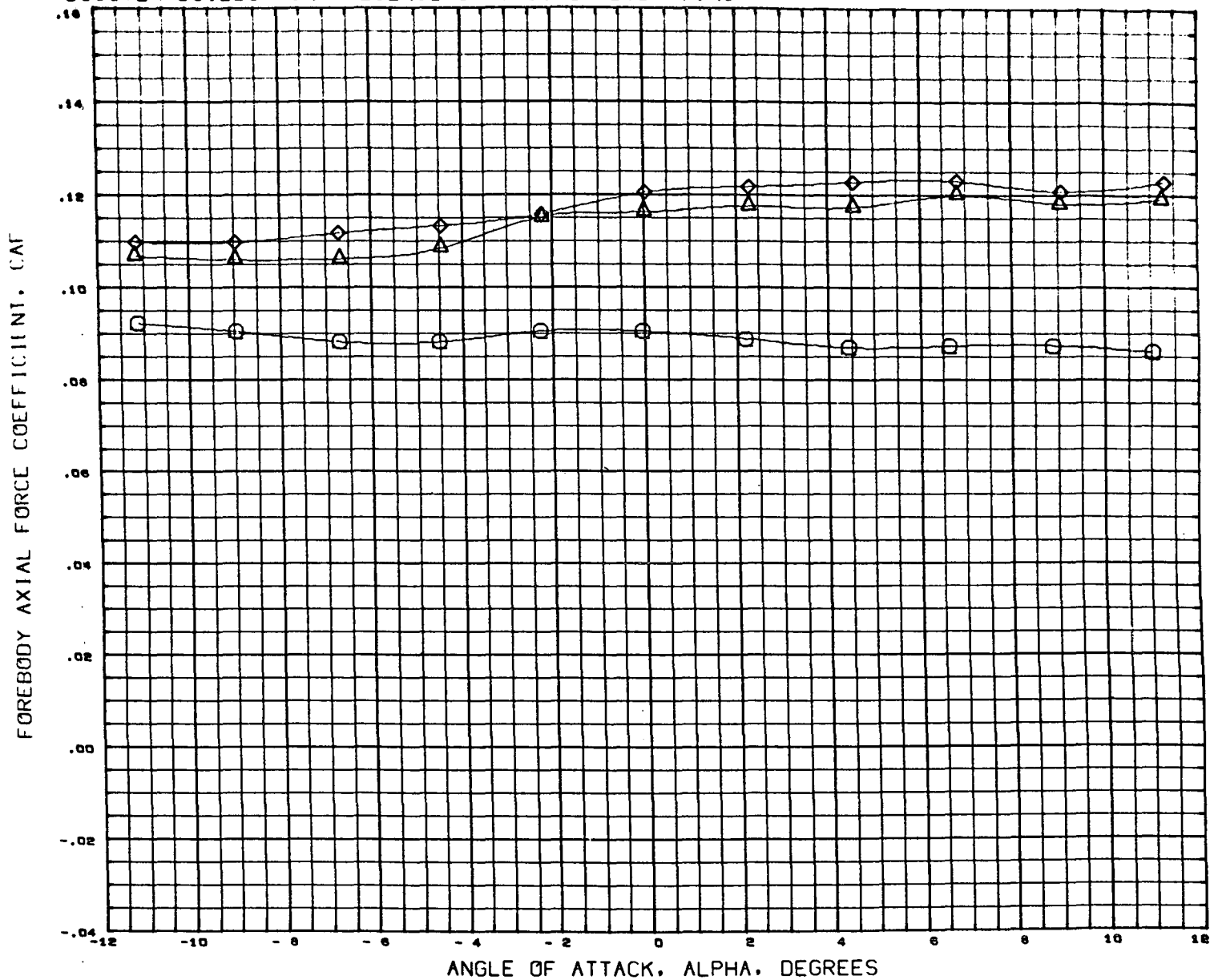
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ZMRP 0.0000

SCALE 0.0035 SCALE

MACH 1.470

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



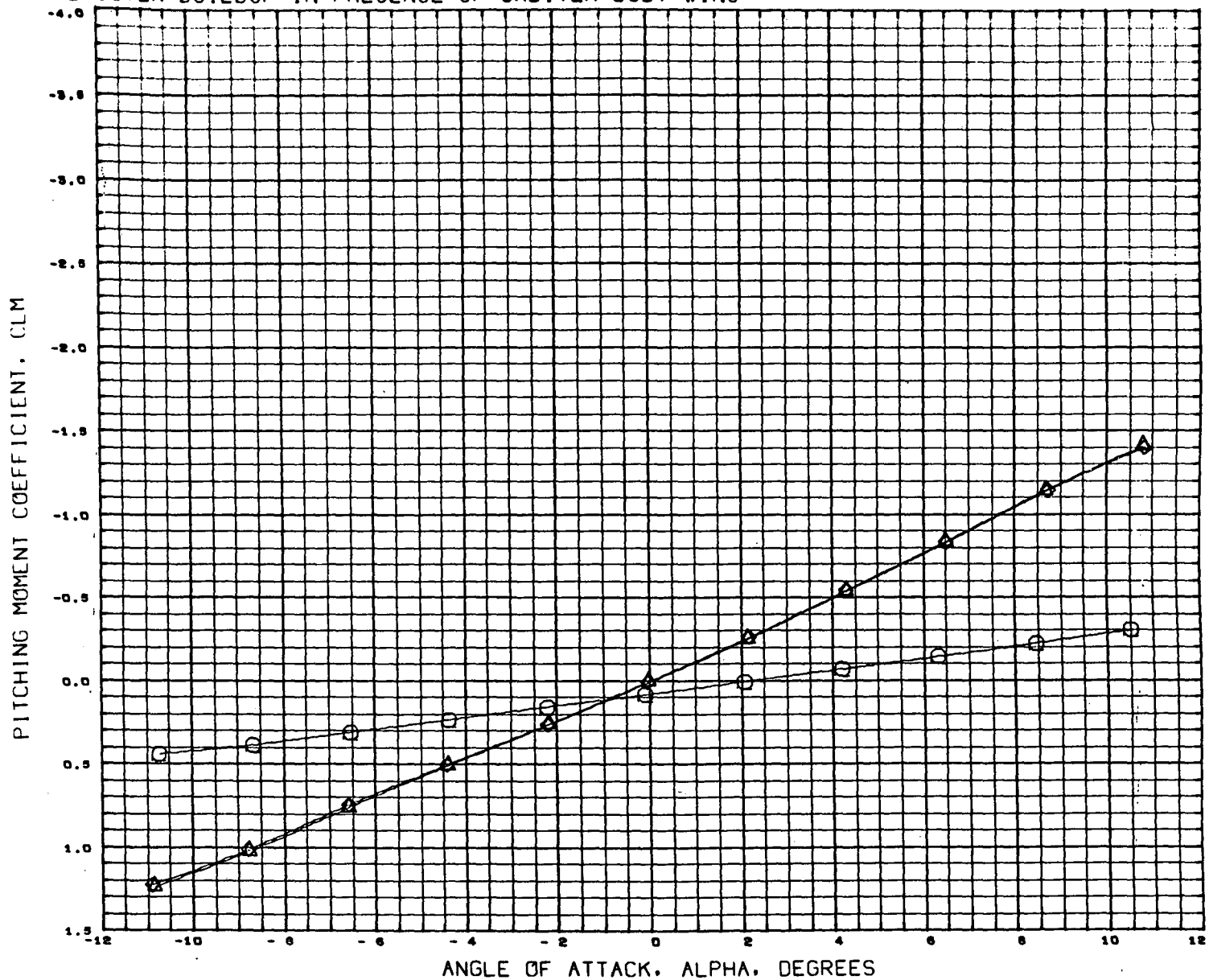
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| (H3210A) △ | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| XMRP | 0.0000 | |
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| SCALE | 0.0035 | SCALE |

MACH 1.955

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



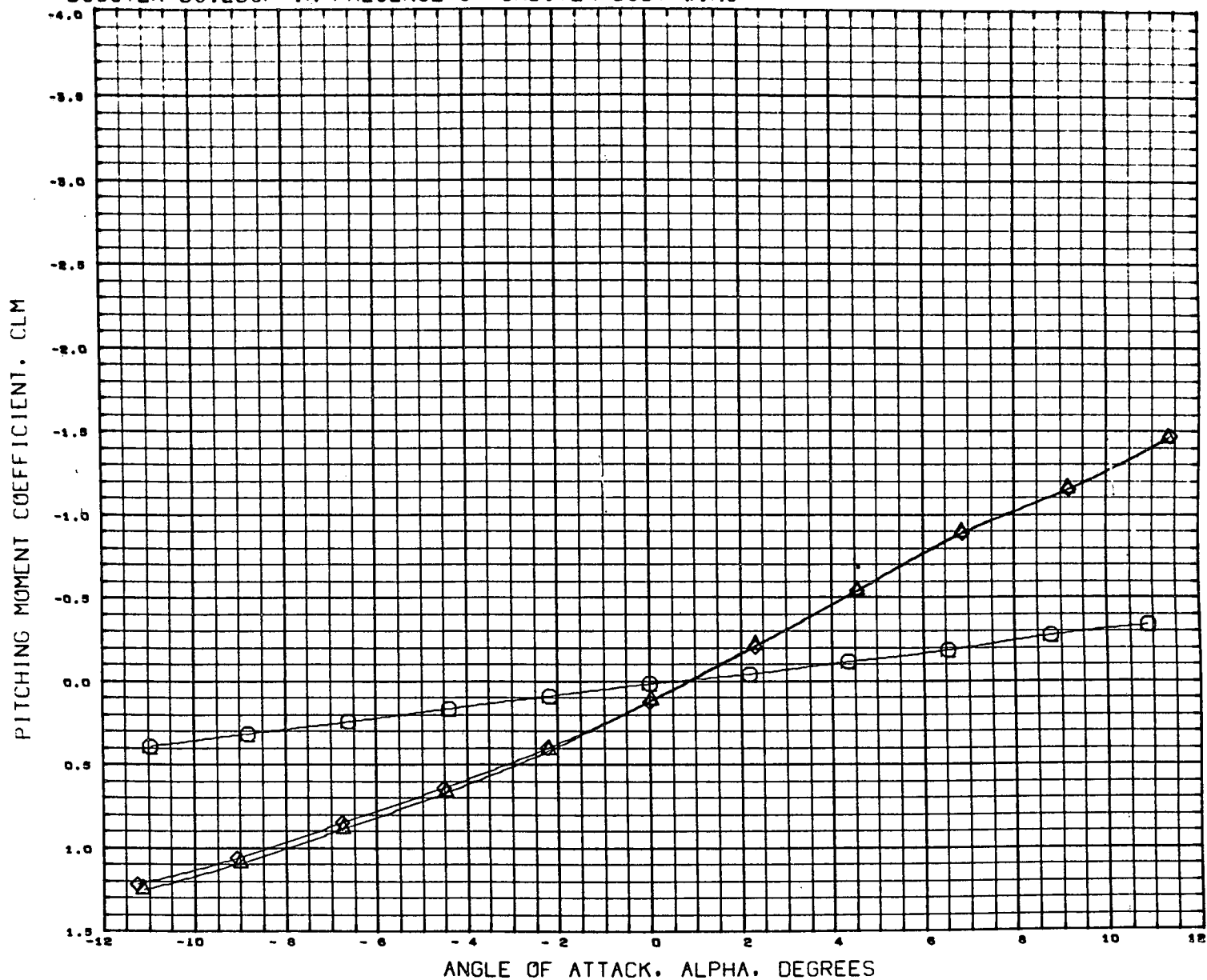
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
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| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.602

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



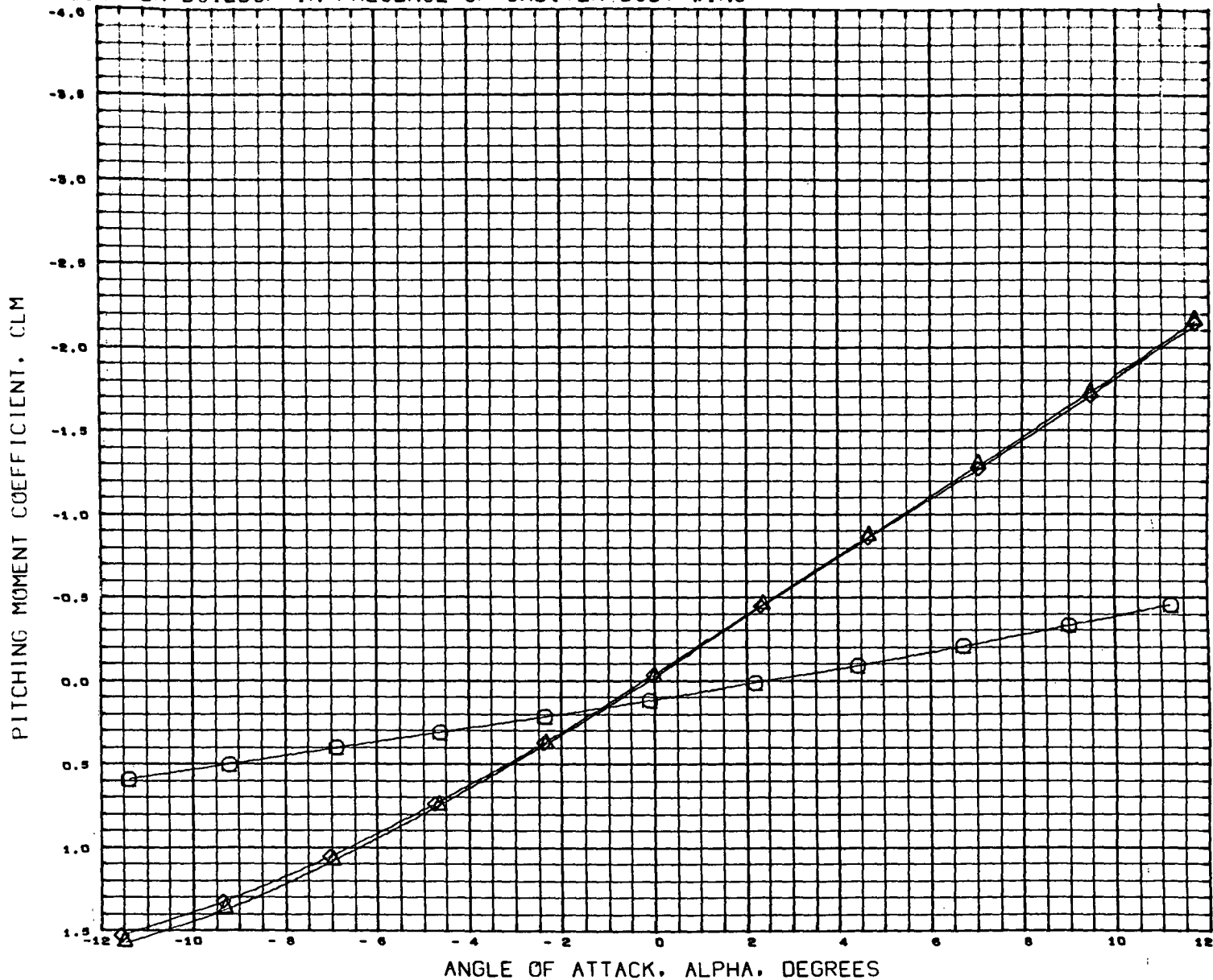
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
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| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.899

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



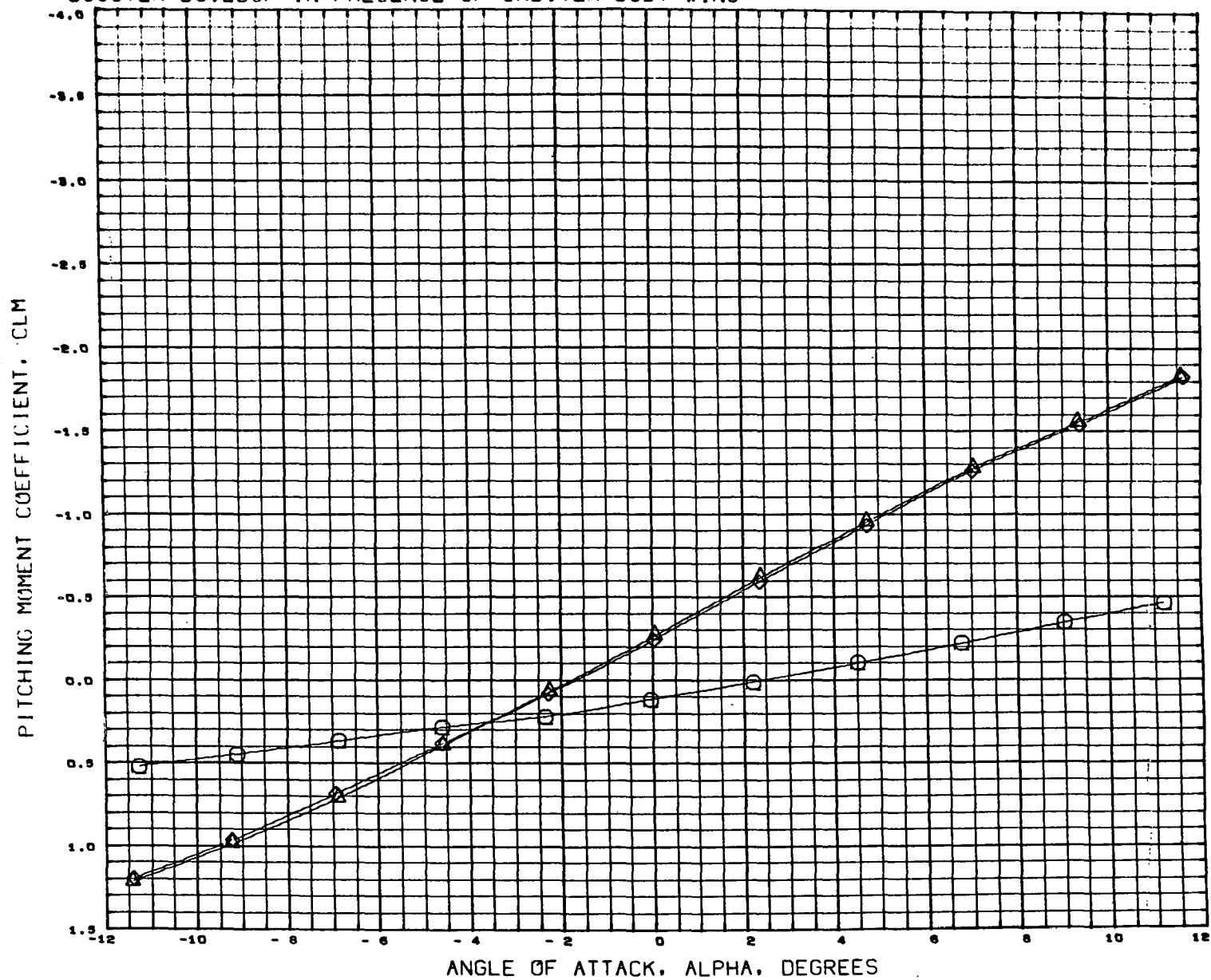
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



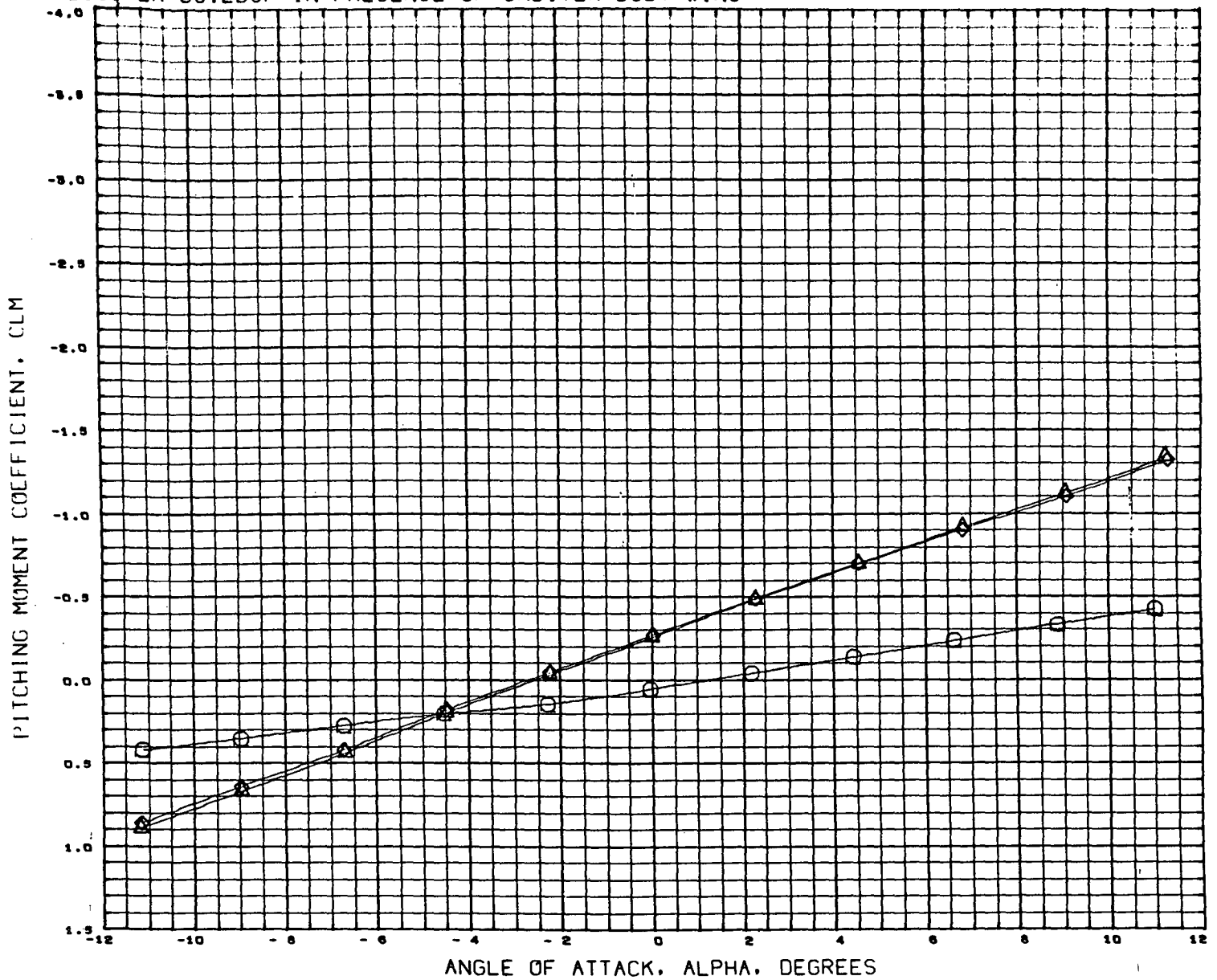
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.470

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



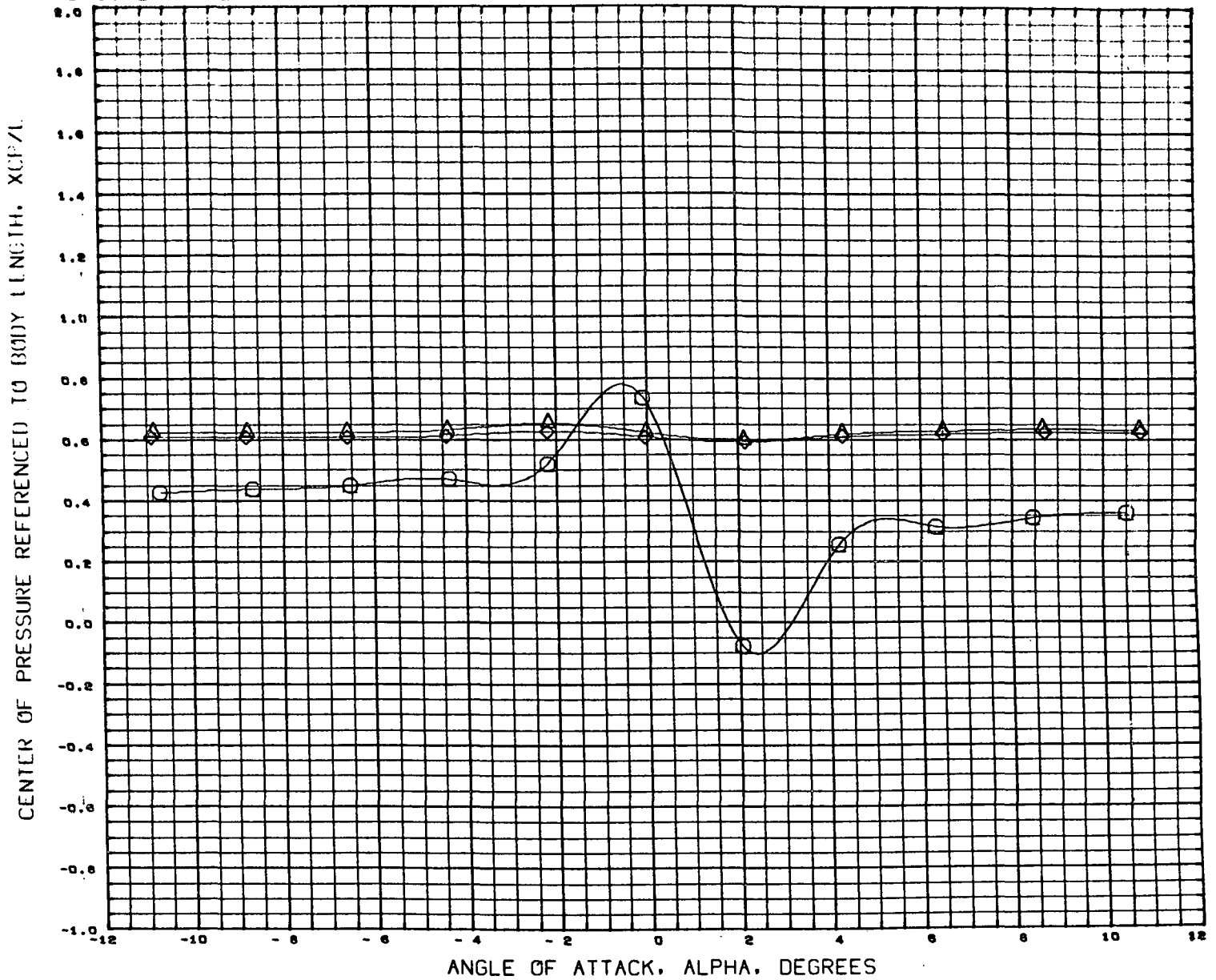
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| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
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| REFERENCE INFORMATION | | |
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.955

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



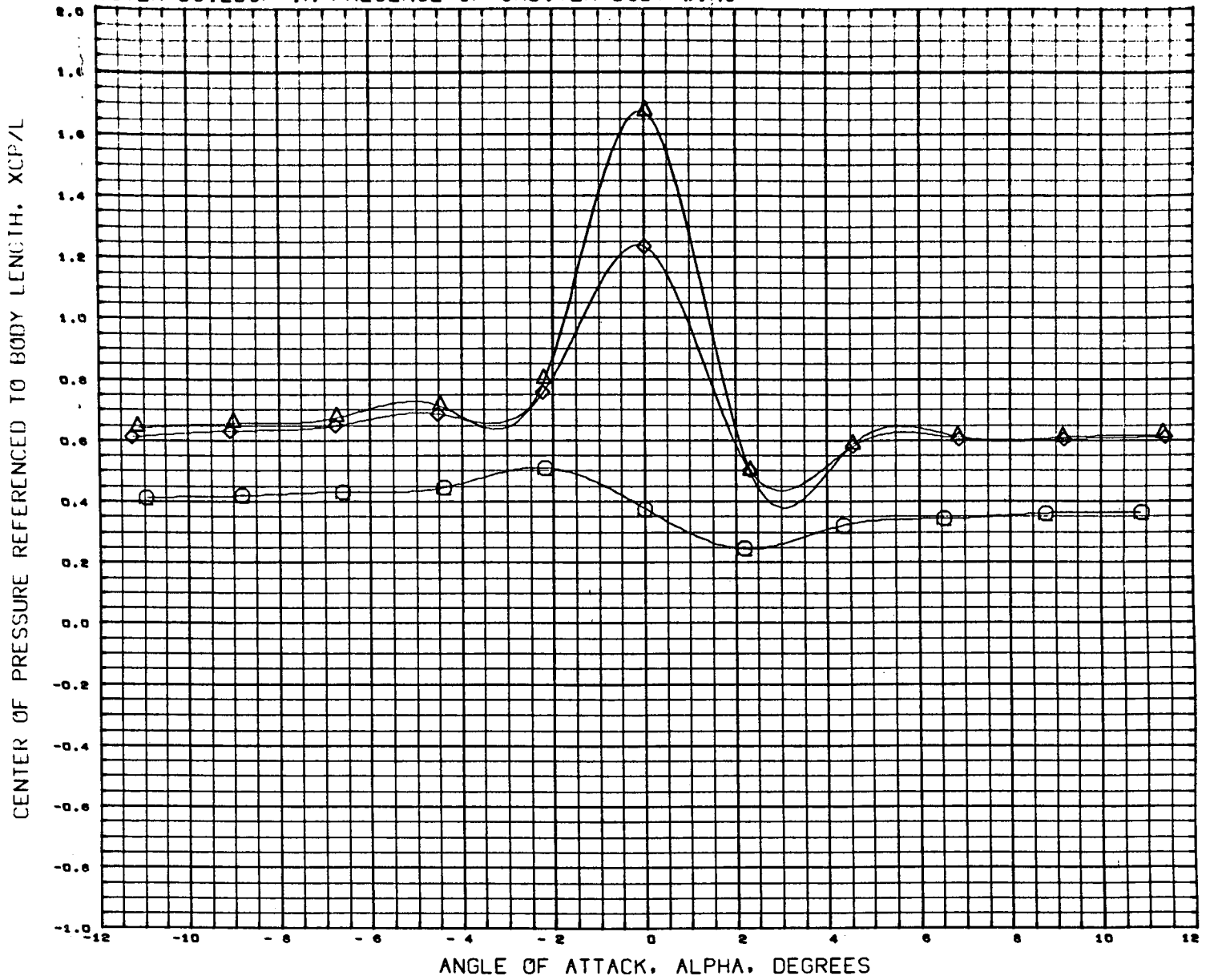
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
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| SCALE | 0.0035 SCALE |

MACH 0.602

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



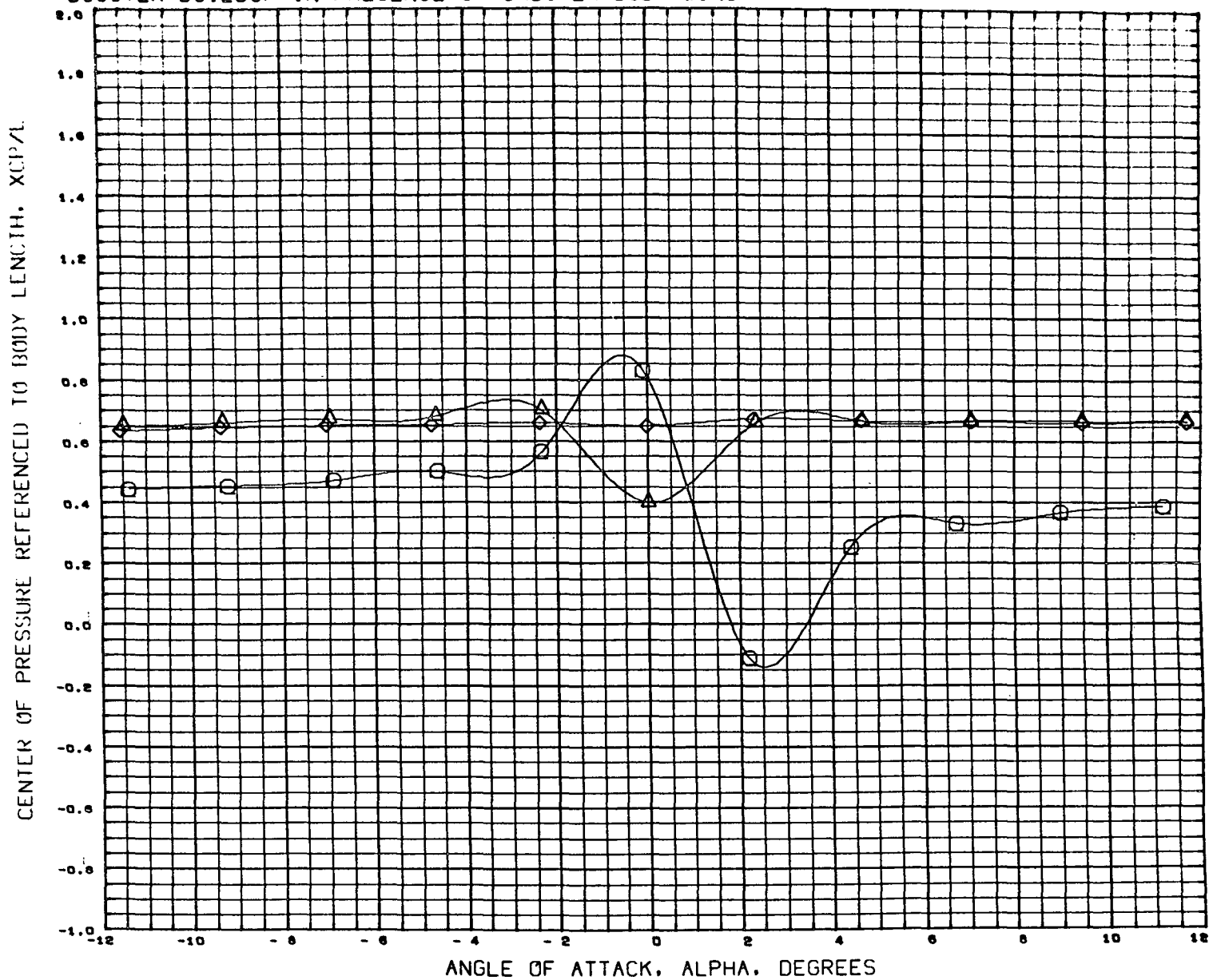
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|-----------------|--------------------------------------|
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| (H3216A) | MSFC490 NR/GD LAUNCH B2D+14+B5W17 |
| (H3217A) | MSFC490 NR/GD LAUNCH B2D+4B+14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.899

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
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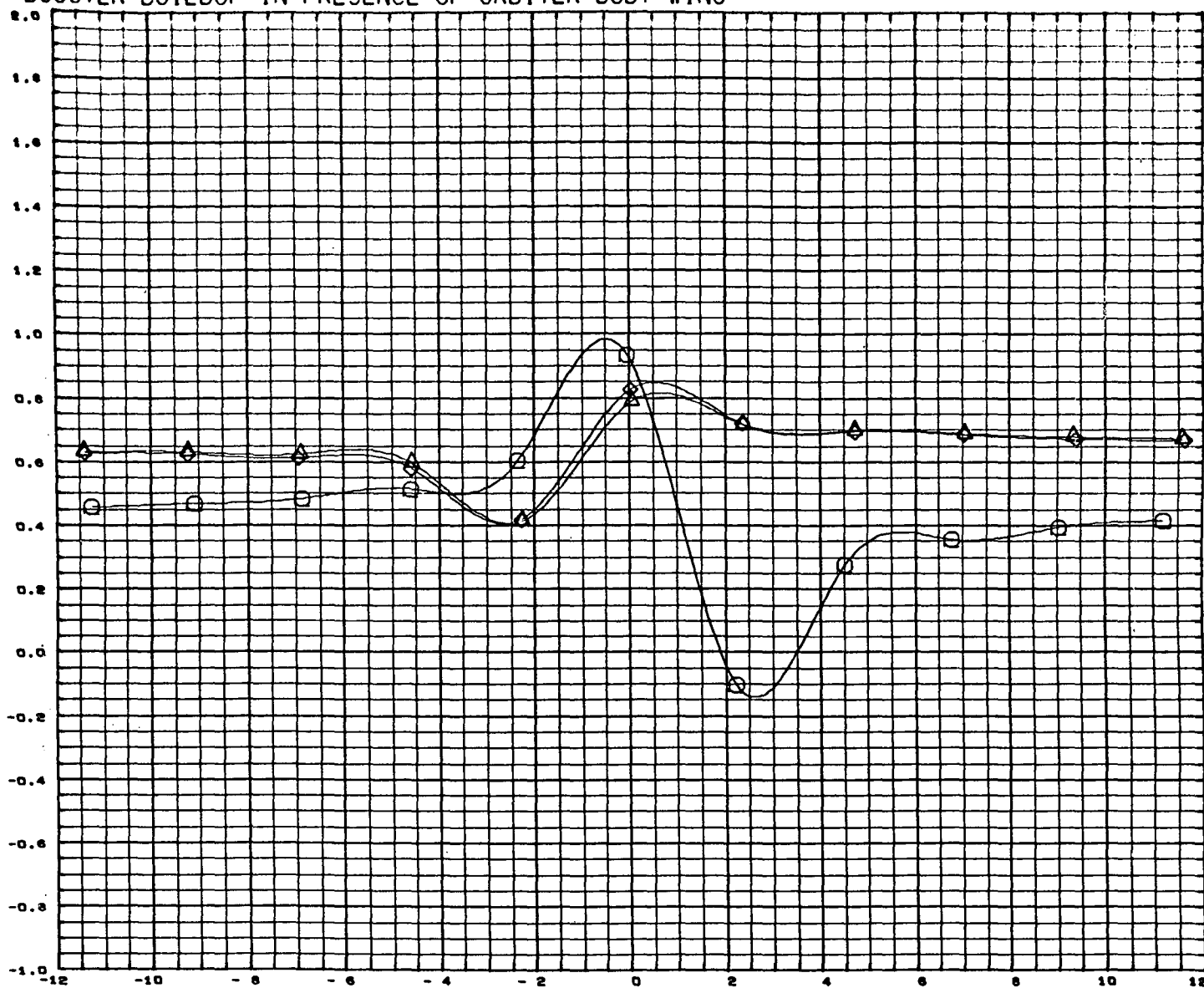
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| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
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| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0039 SCALE |

MACH 1.098

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



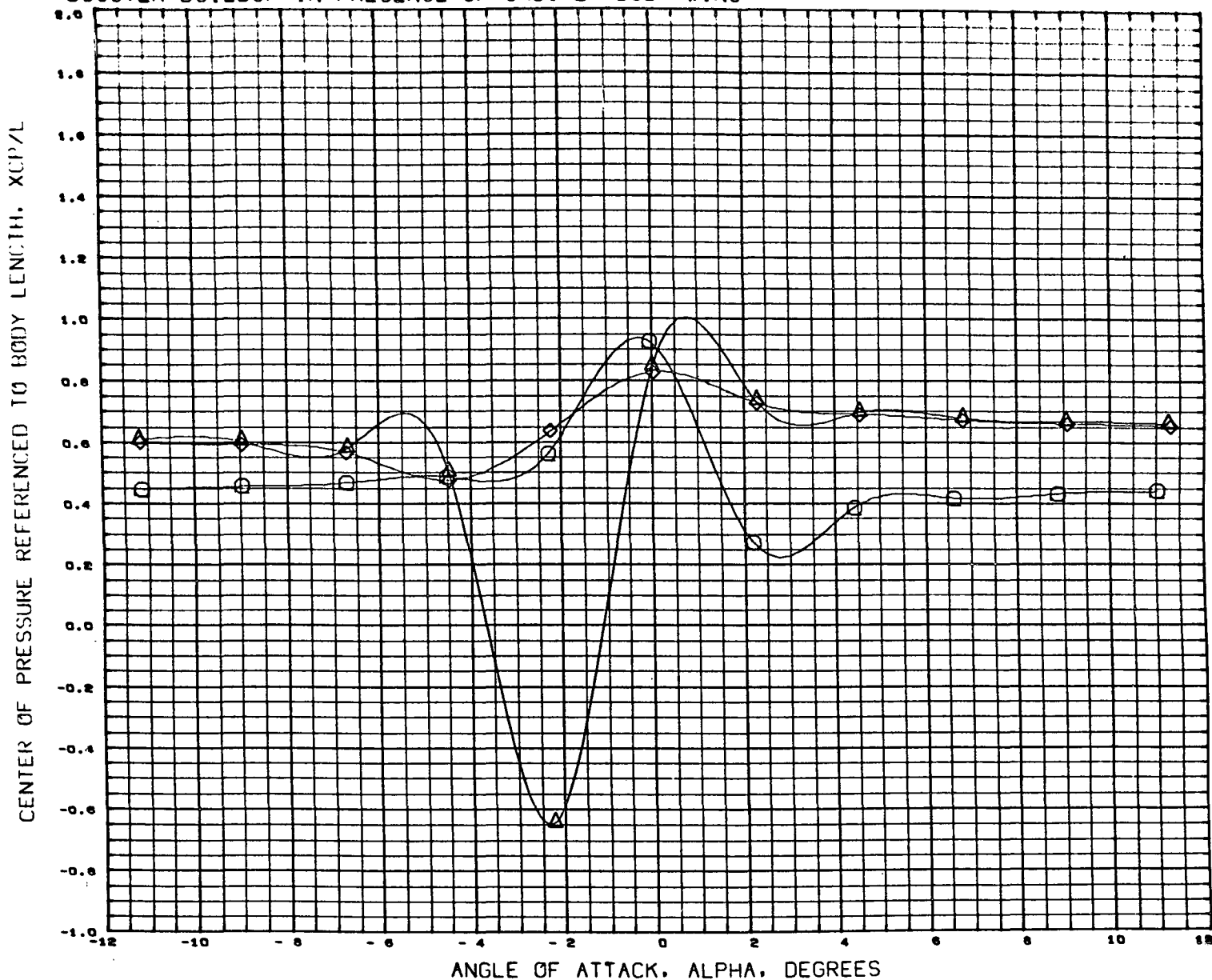
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
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| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.470

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



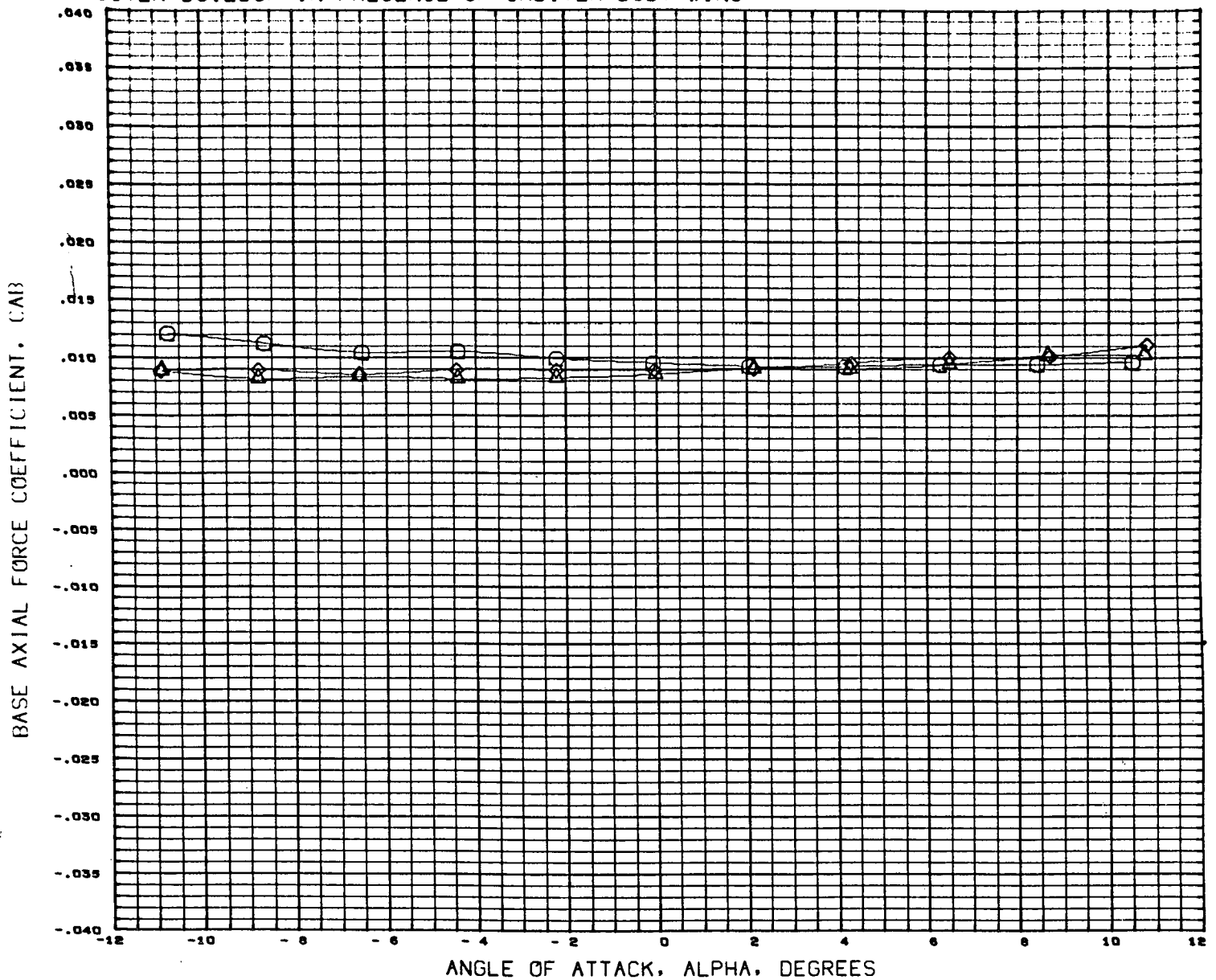
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
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| SREF | 15.6560 SQ IN |
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| YMRP | 0.0000 |
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| SCALE | 0.0035 SCALE |

MACH 1.955

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



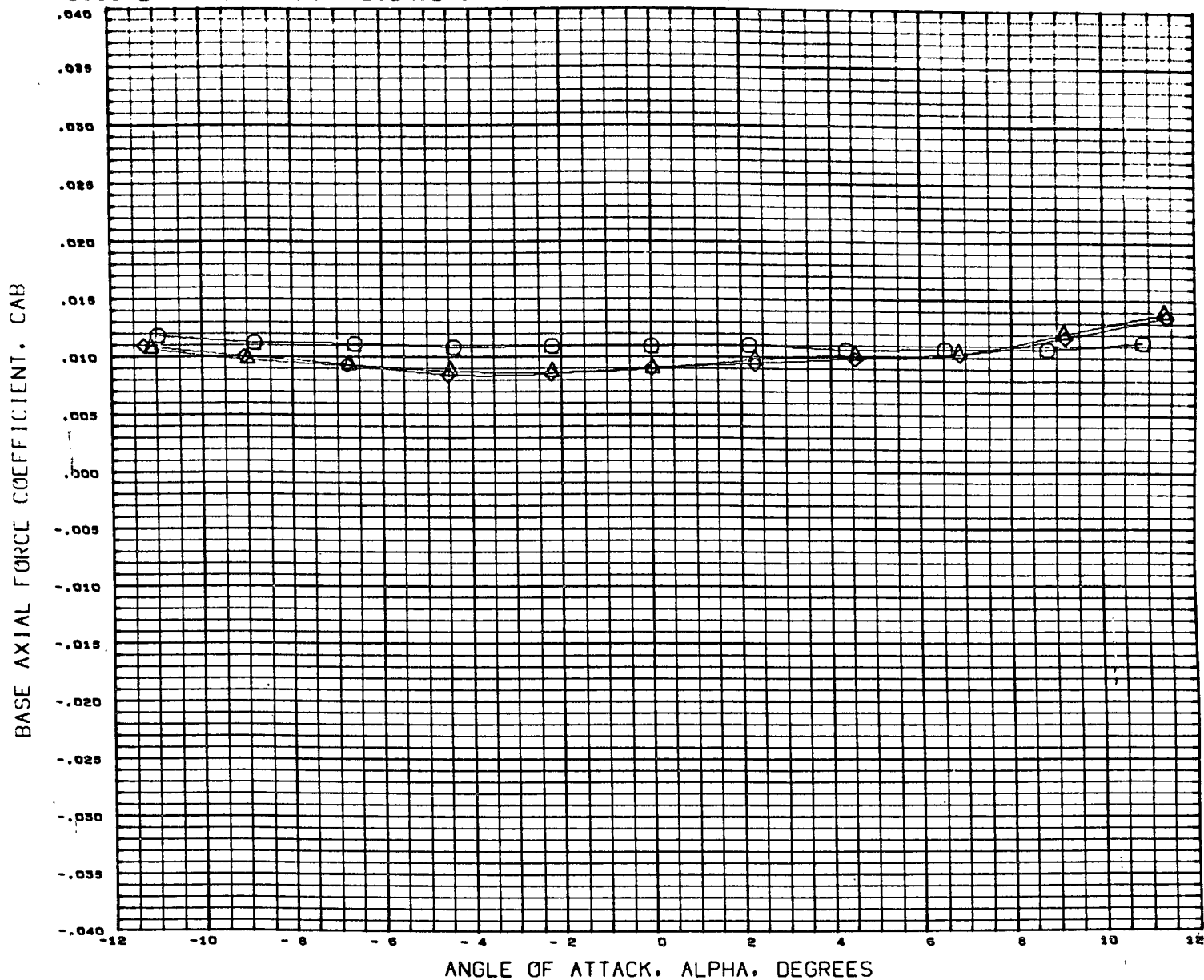
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
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| SCALE | 0.0035 | SCALE |

MACH 0.602

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



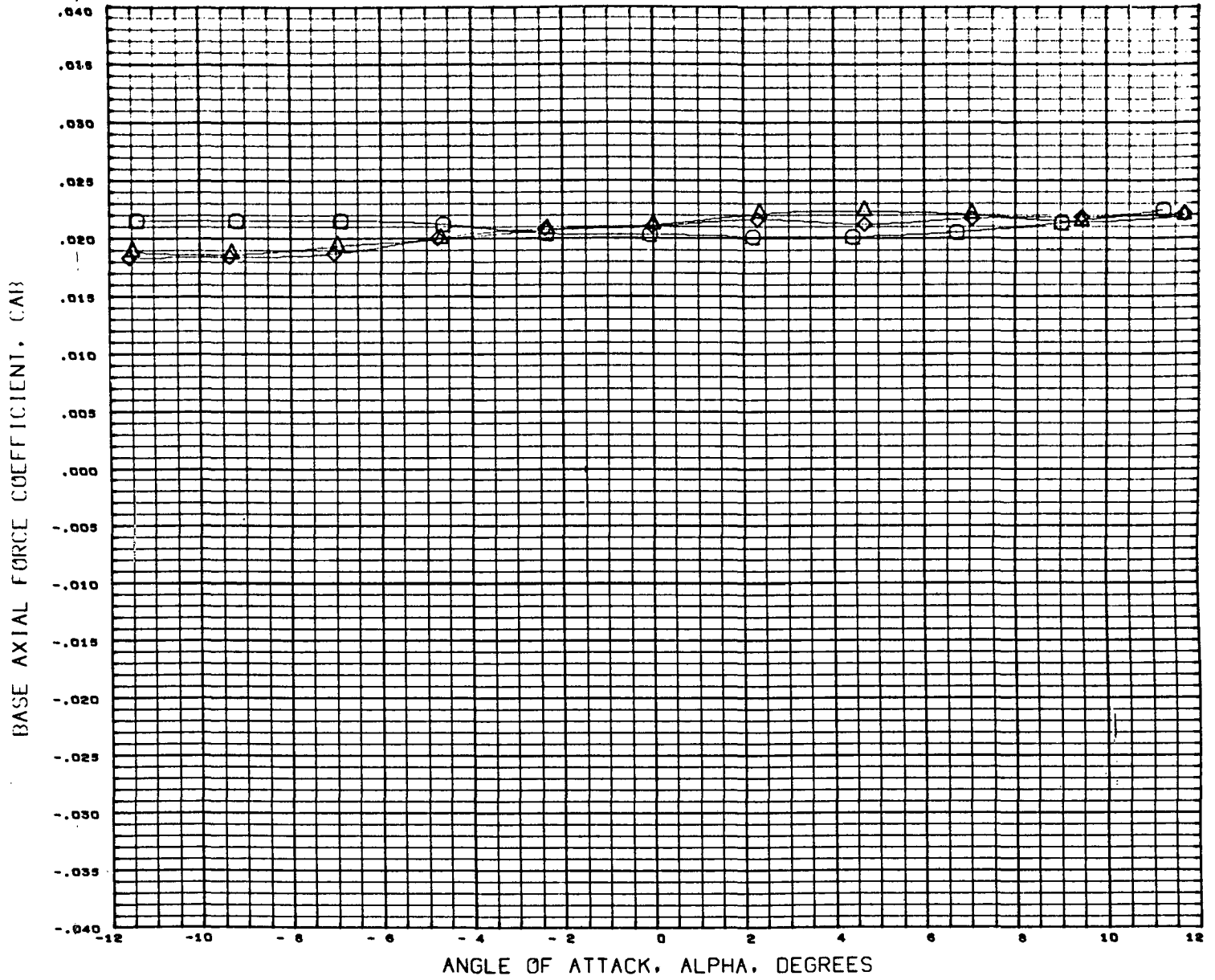
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B3W17 |
| (H321DA) | MSFC490 NR/GD LAUNCH B20W14+B3W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B3W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.899

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



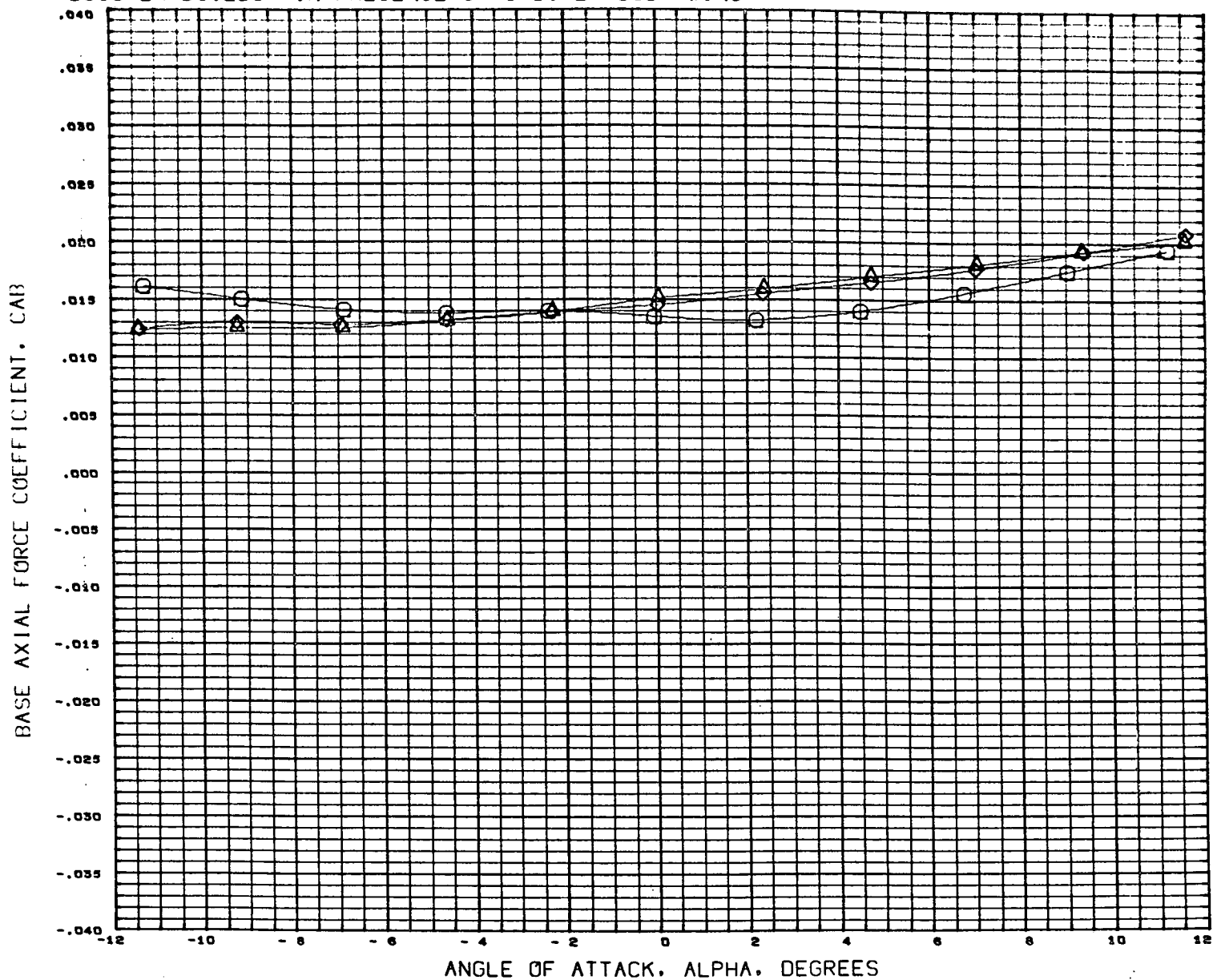
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.098

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



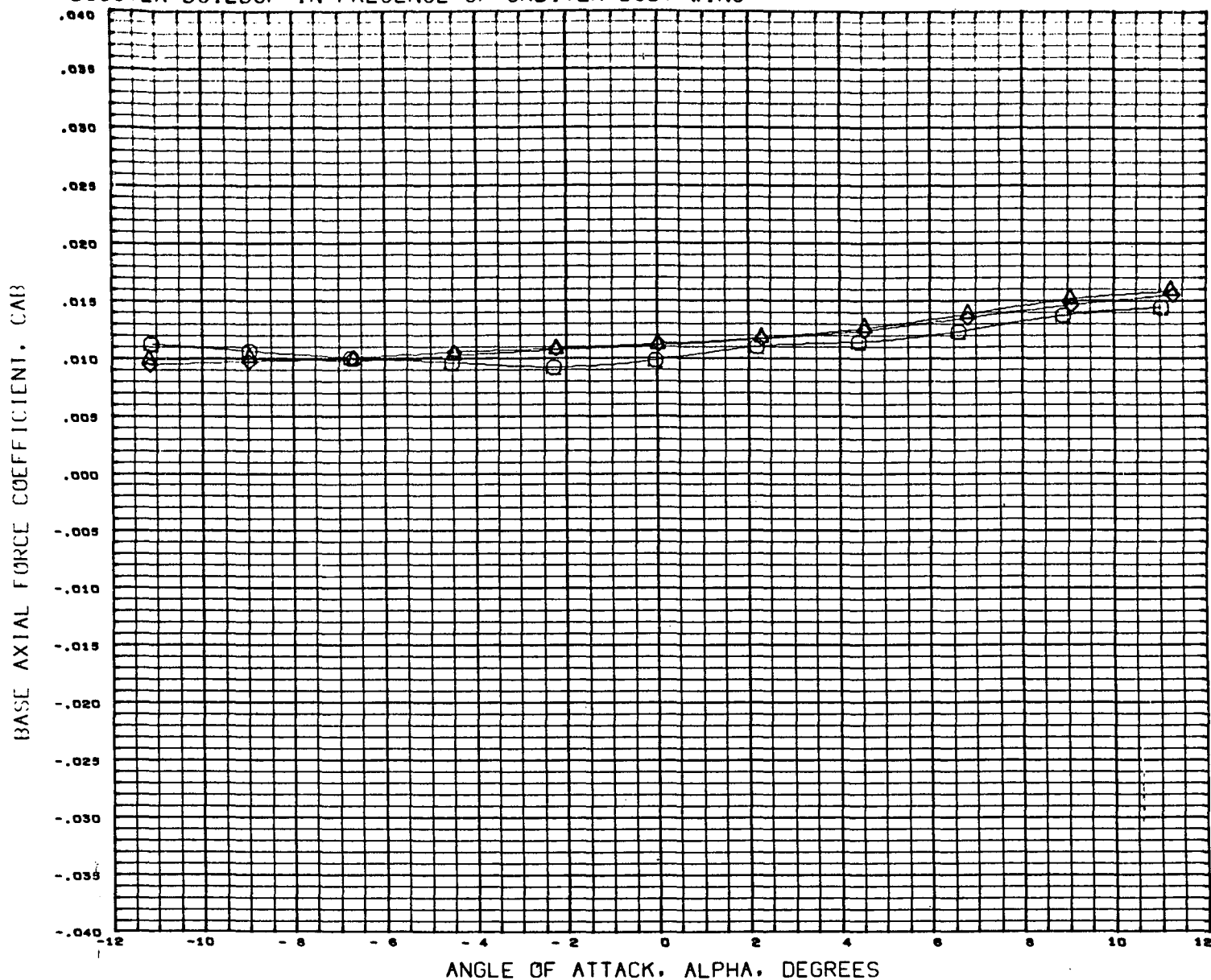
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|-----------------|--------------------------------------|
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.470

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|----------|--------|--------------------------------------|
| (H3213A) | ○ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3210A) | △ | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3211A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

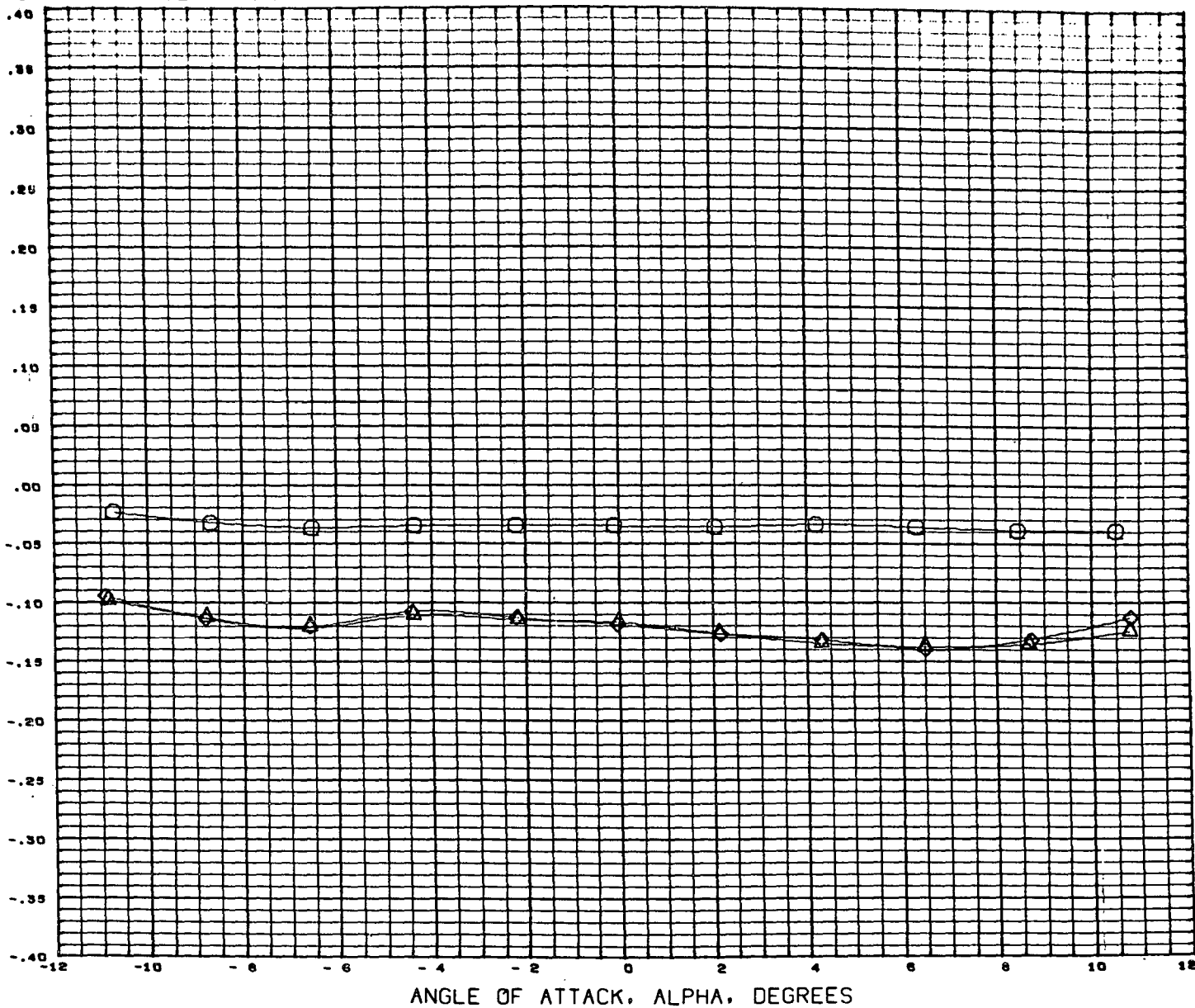
| BETA | ELVORB |
|-------|--------|
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| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.955

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13211A) | MSFC490 NR/GD LAUNCH B20C48W14+B5W17 |

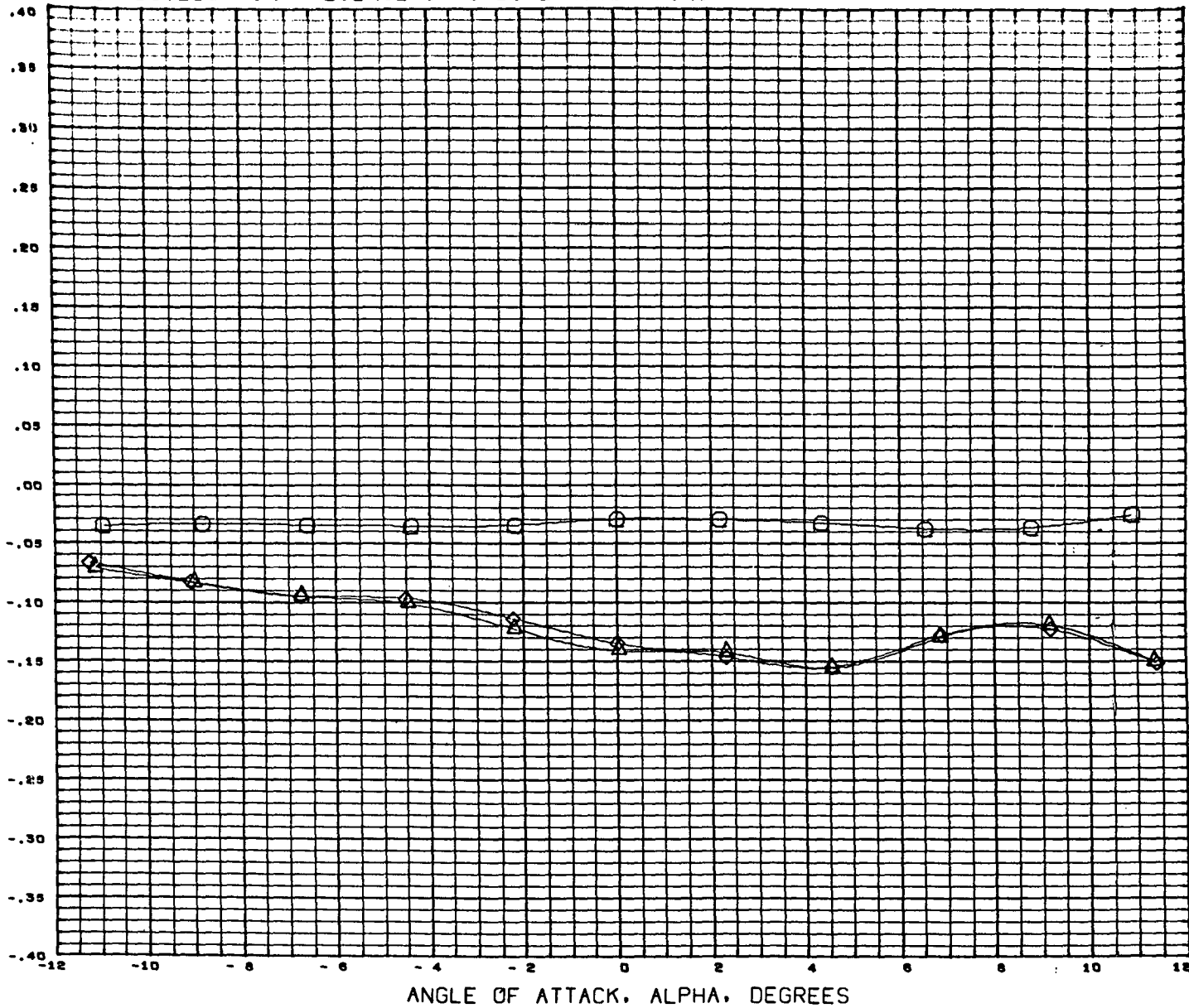
| BETA | ELVORB |
|-------|--------|
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| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.602

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CL_{MALP} (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



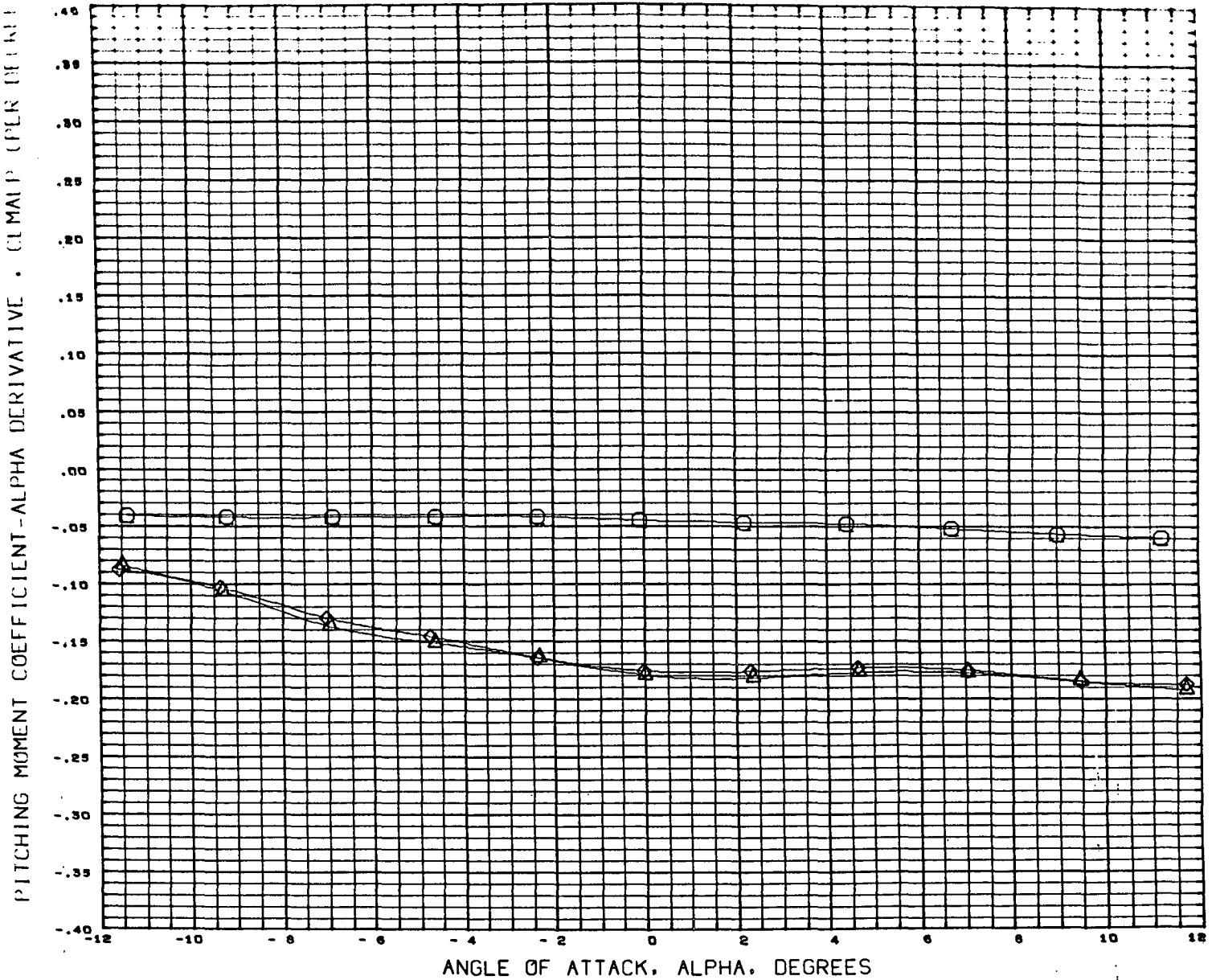
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|-----------------|--------------------------------------|
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.899

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---------------------------------------|
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13211A) | MSFC490 NR/GD LAUNCH B20C4B5W14+B5W17 |

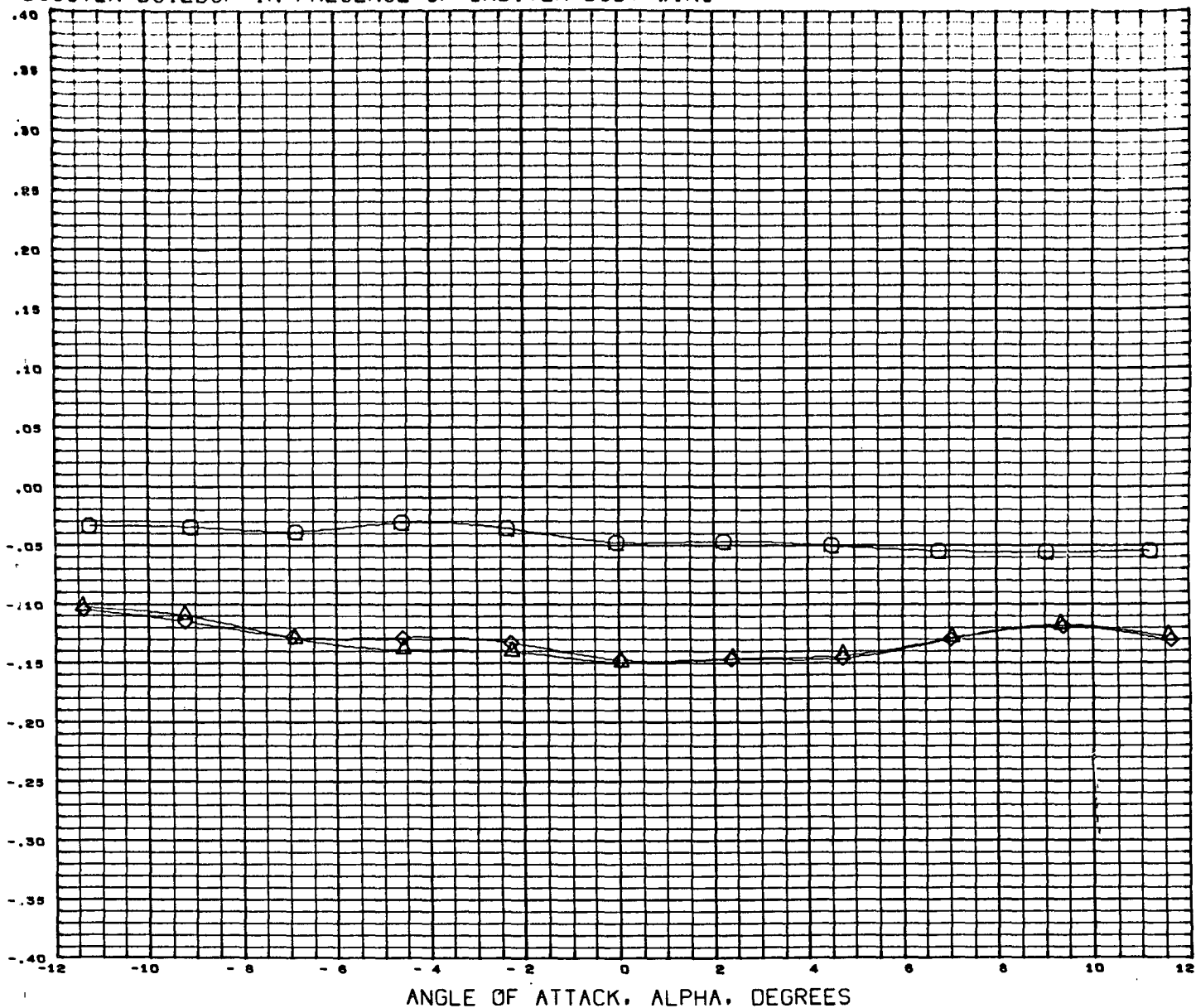
| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.098

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM_{AP} (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

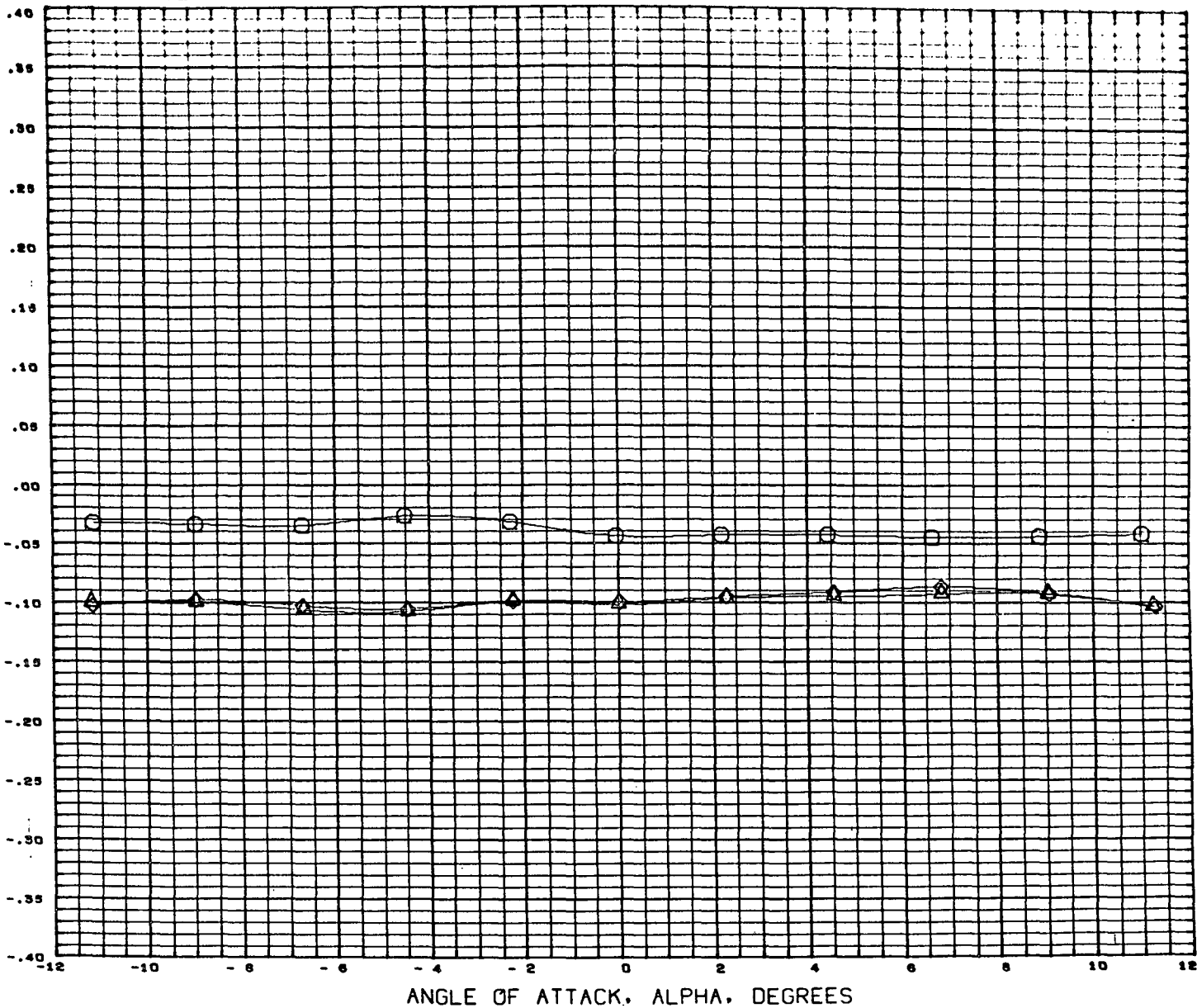
| BETA | ELVORB |
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| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.470

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE • CLM_{ALP} (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---------------------------------------|
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13211A) | MSFC490 NR/GD LAUNCH B20C4B5W14+B5W17 |

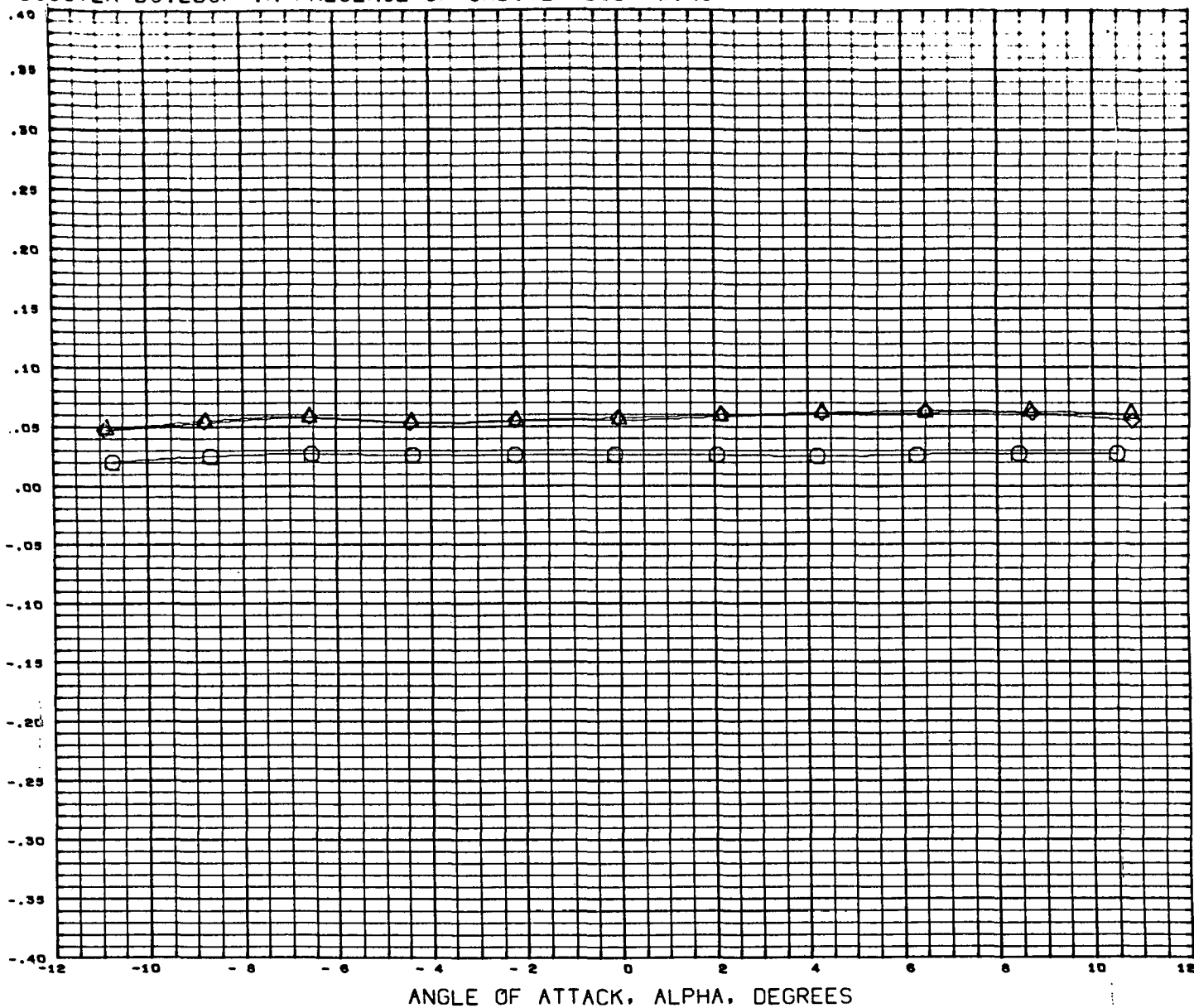
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| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.955

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



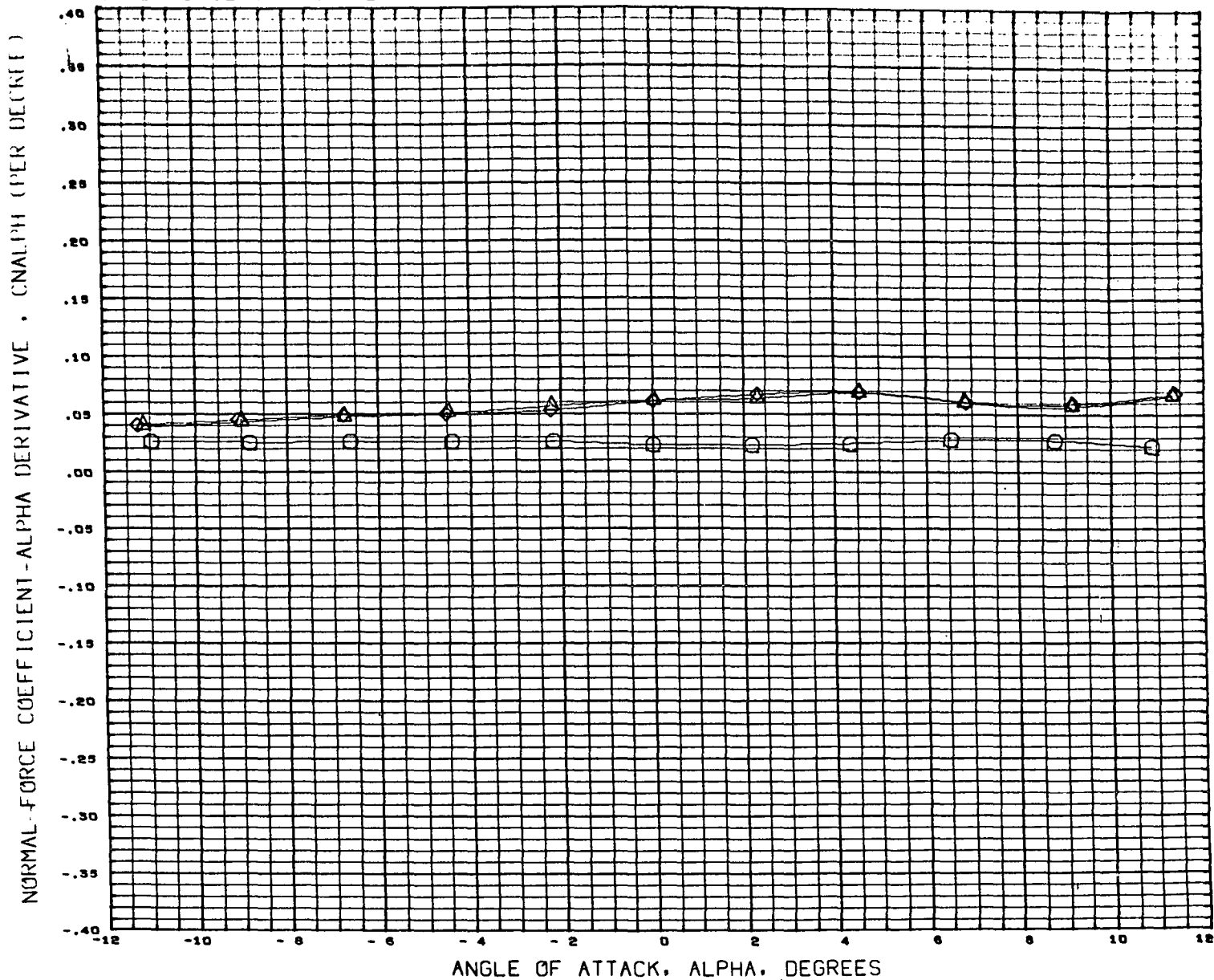
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|----------------------|--------------------------------------|
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| (13210A) \triangle | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13211A) \diamond | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.602

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.899

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.098

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13211A) | MSFC490 NR/GD LAUNCH B20C4EW14+B5W17 |

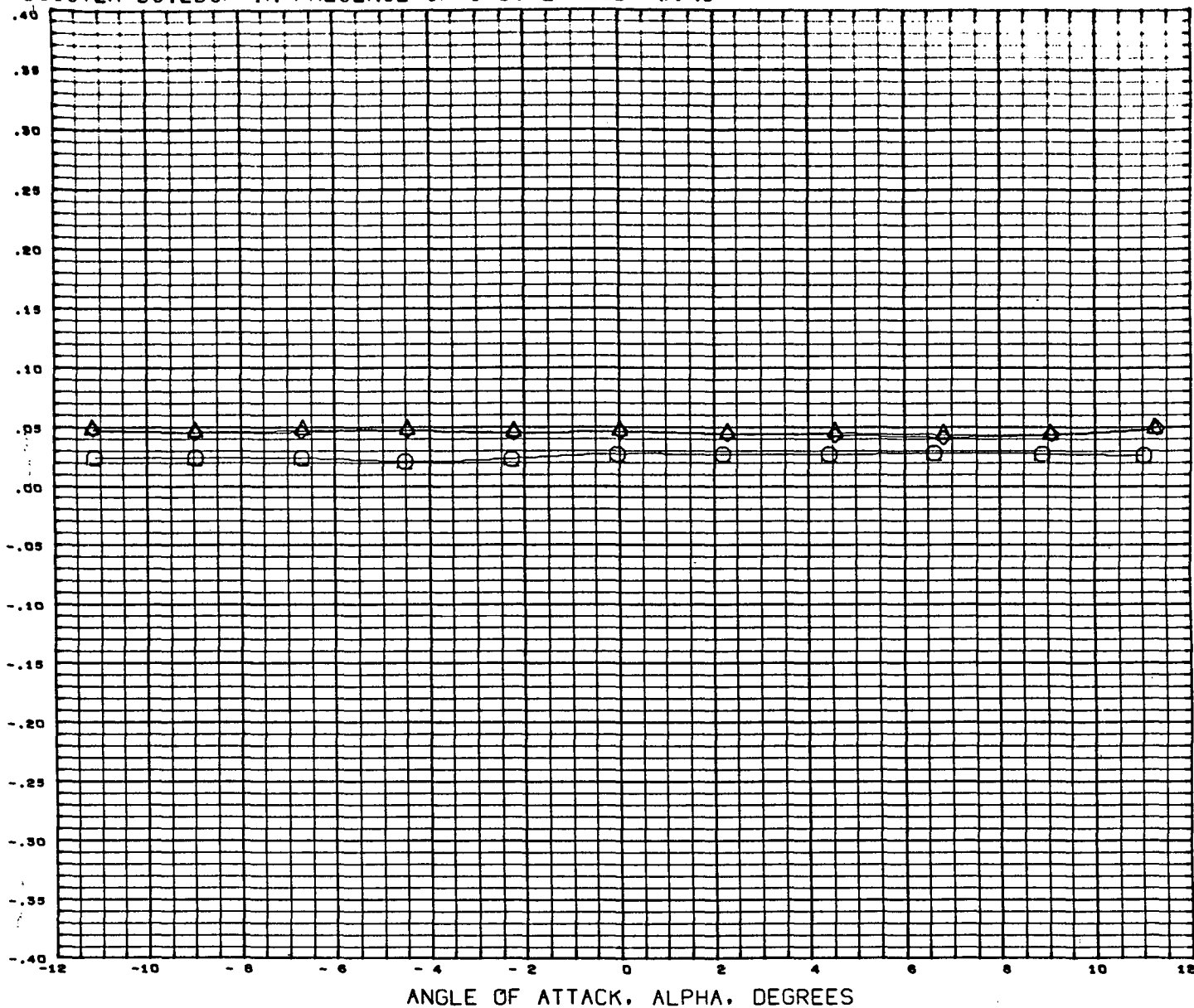
| BETA | ELVORB |
|-------|--------|
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| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRR | 0.0000 | |
| YMRR | 0.0000 | |
| ZMRR | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.470

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.955

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM_{ALP} (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

ALPHA=0.



MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (J3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (J3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (J3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

| BETA | ELVORB |
|-------|--------|
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| 0.000 | 0.000 |
| 0.000 | 0.000 |

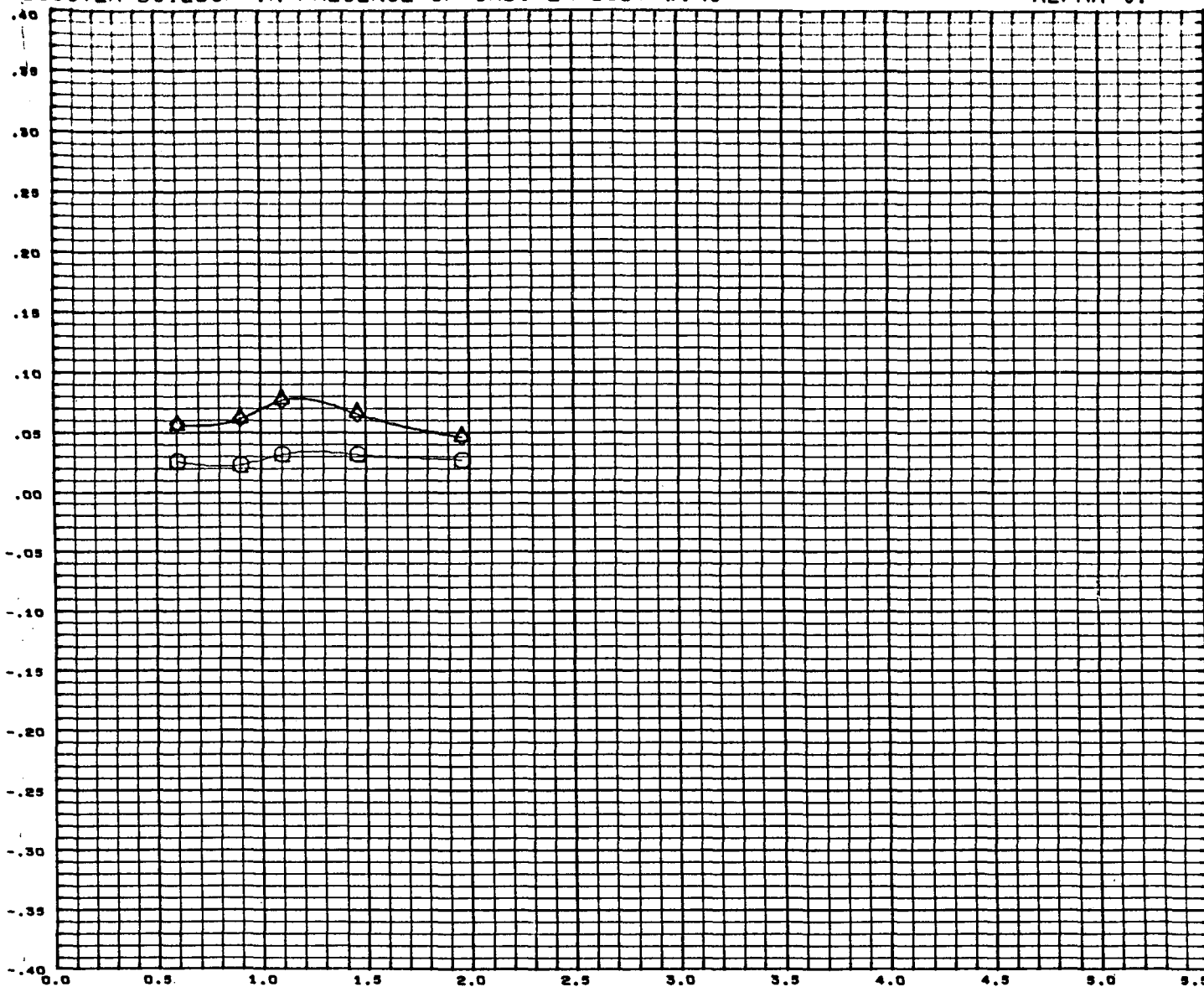
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| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

ALPHA=0.

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, C_NALPHA (PER DEGREE)



MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (J3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (J3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (J3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

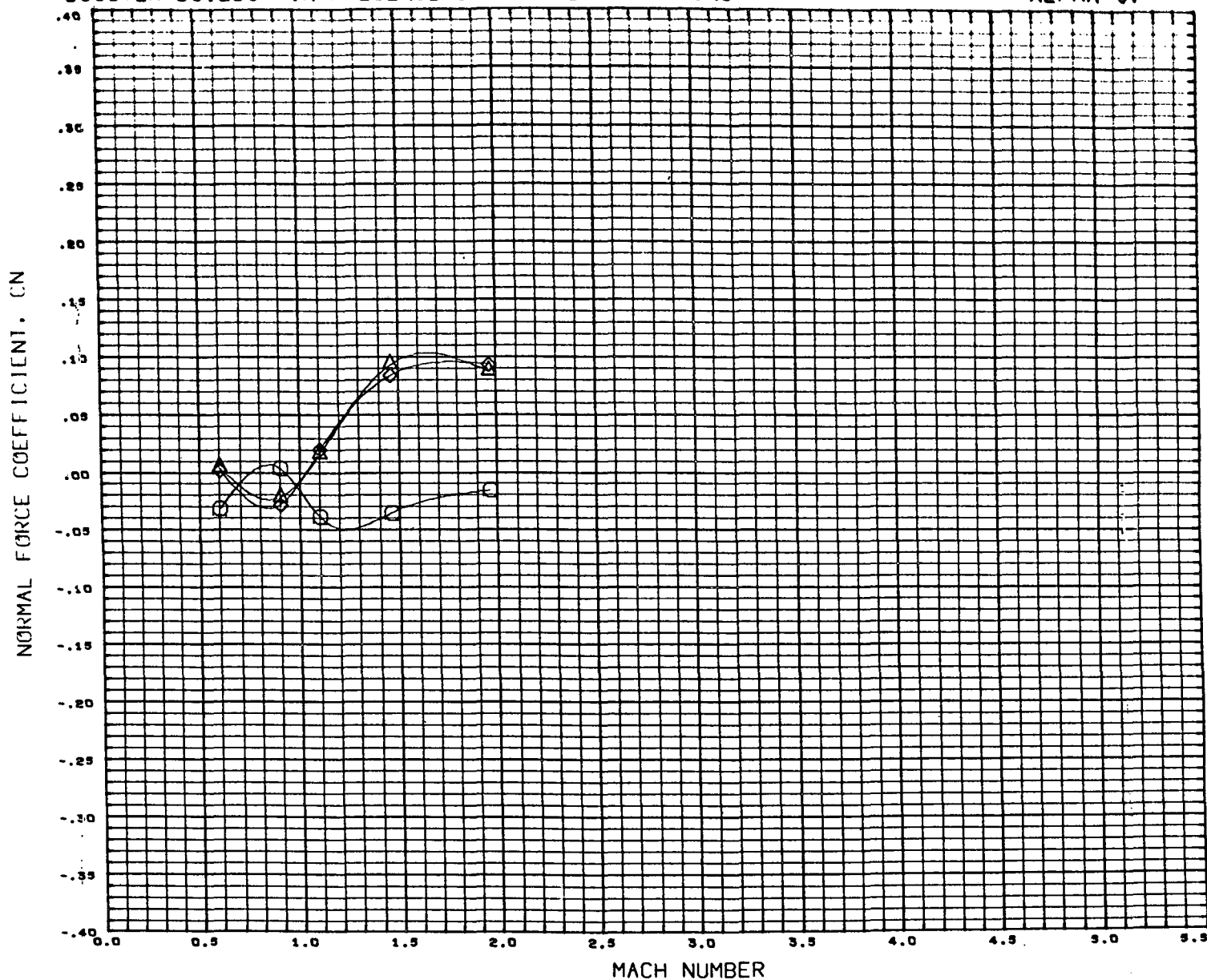
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| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (K3213A) ○ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (K3210A) △ | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (K3211A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

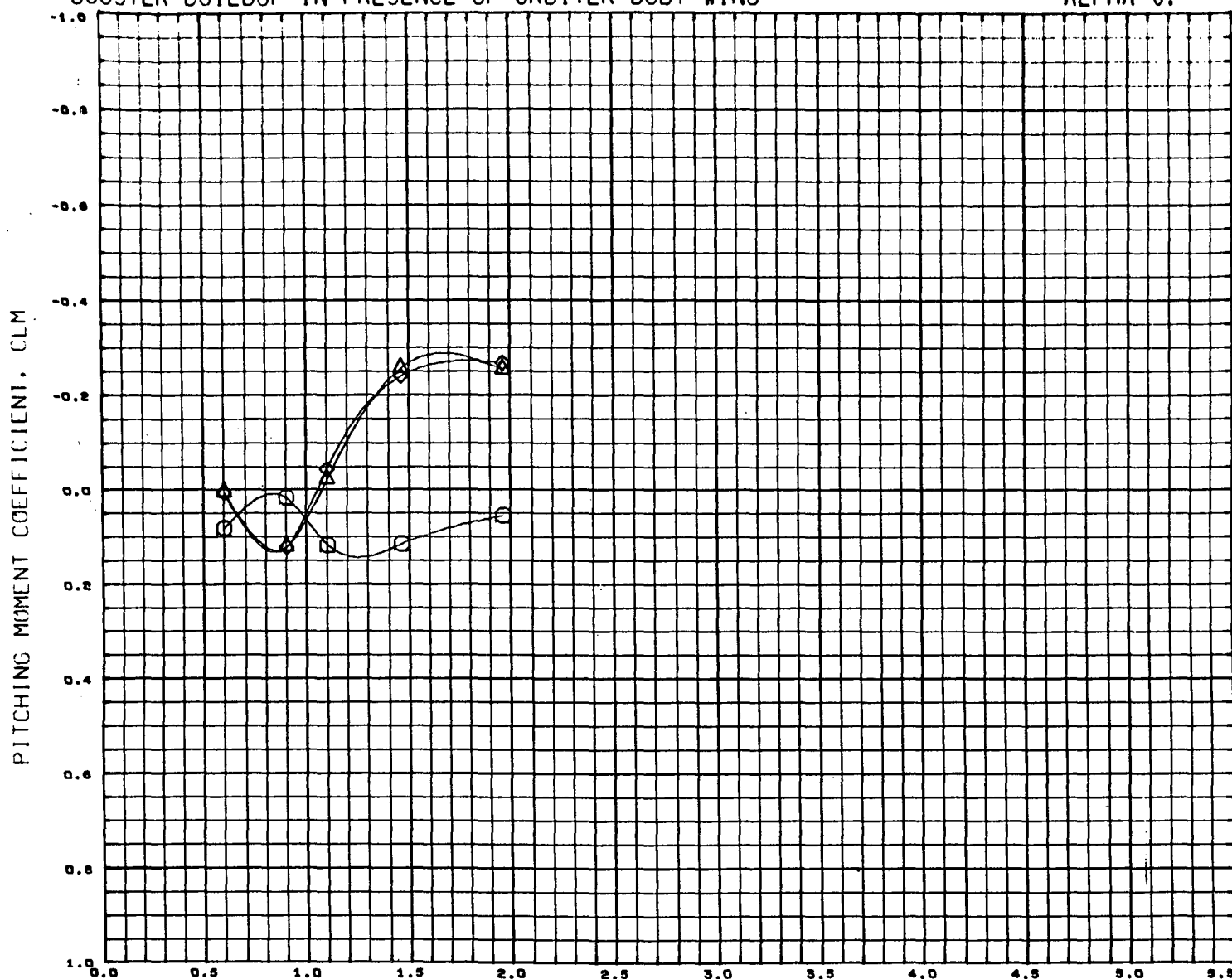
| BETA | ELVORB |
|-------|--------|
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| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (K3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (K3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (K3211A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

MACH NUMBER

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF ORBITER BODY-WING

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (K3213A) ○ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (K3210A) △ | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (K3211A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17 |

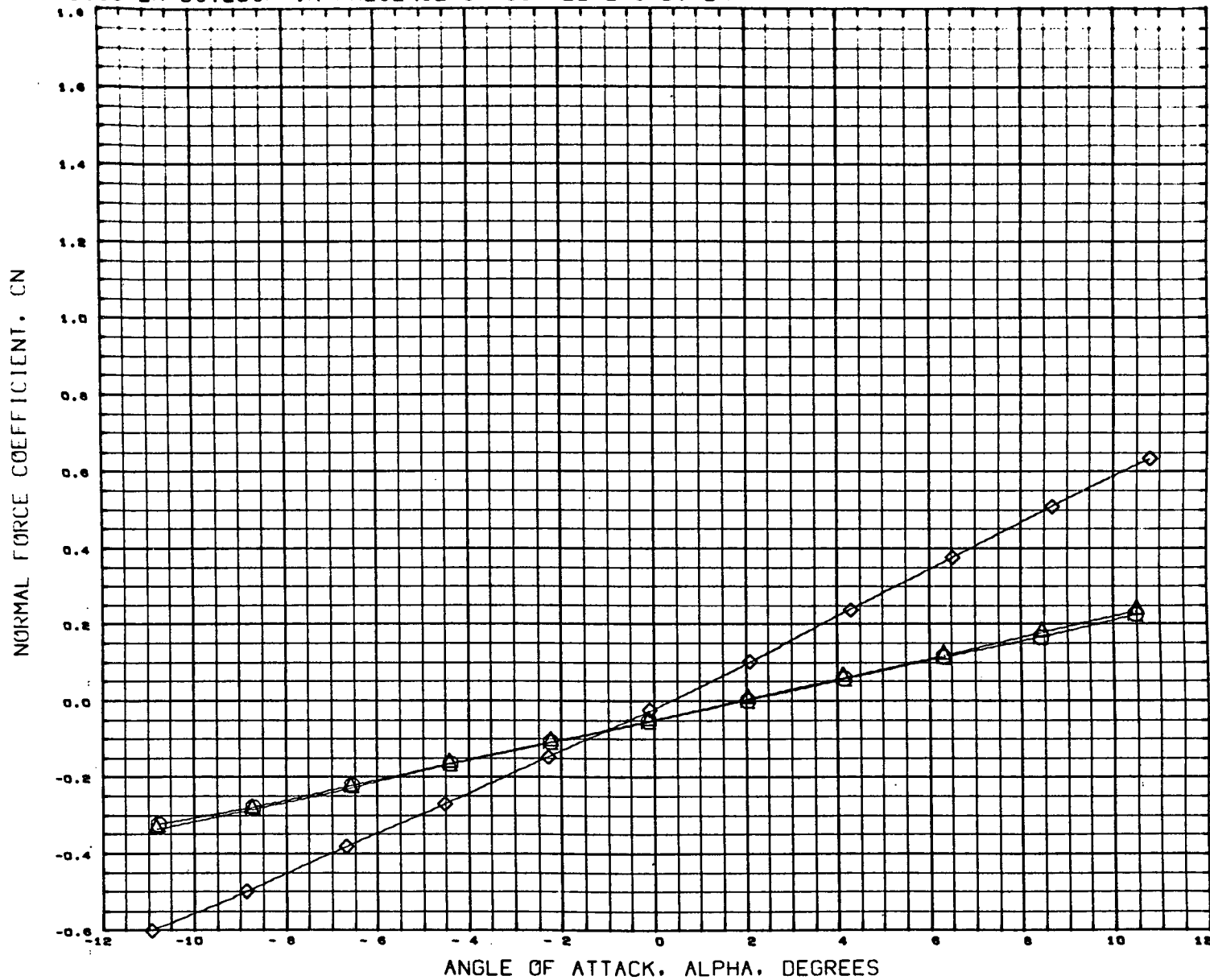
MACH NUMBER

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 0.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



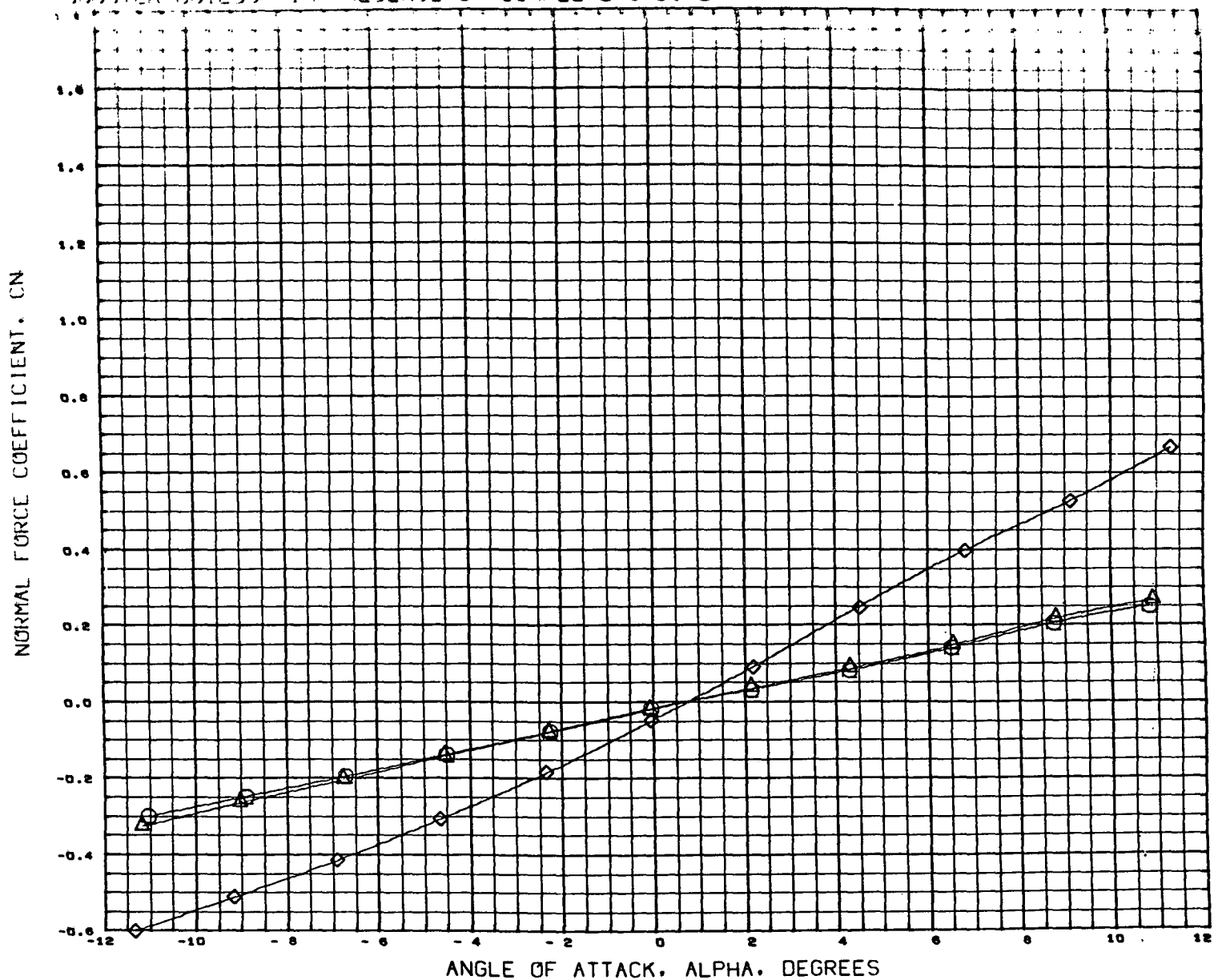
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|-----------------|---|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.604

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



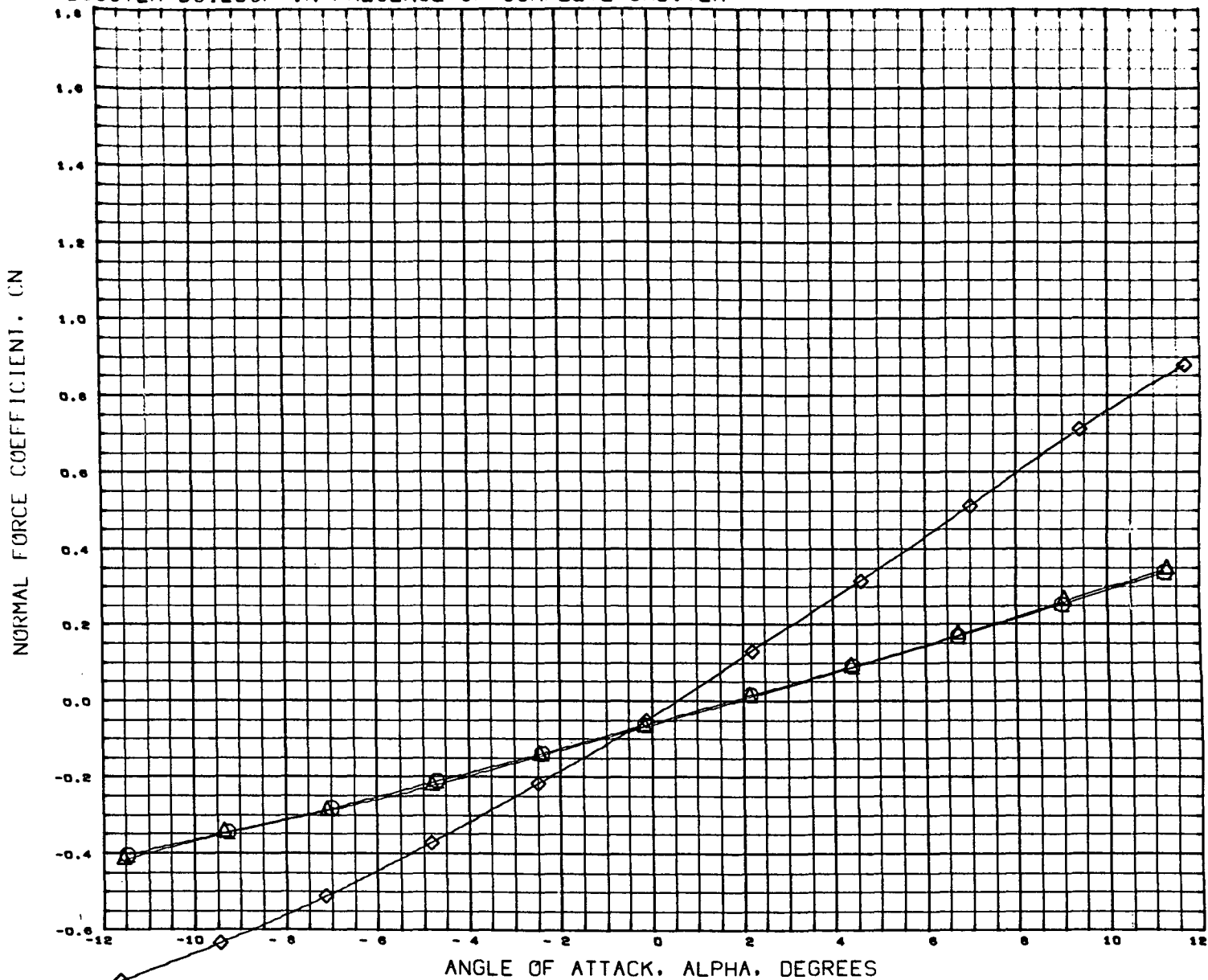
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|----------|--------|---|
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| (H3215A) | △ | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | 50 IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



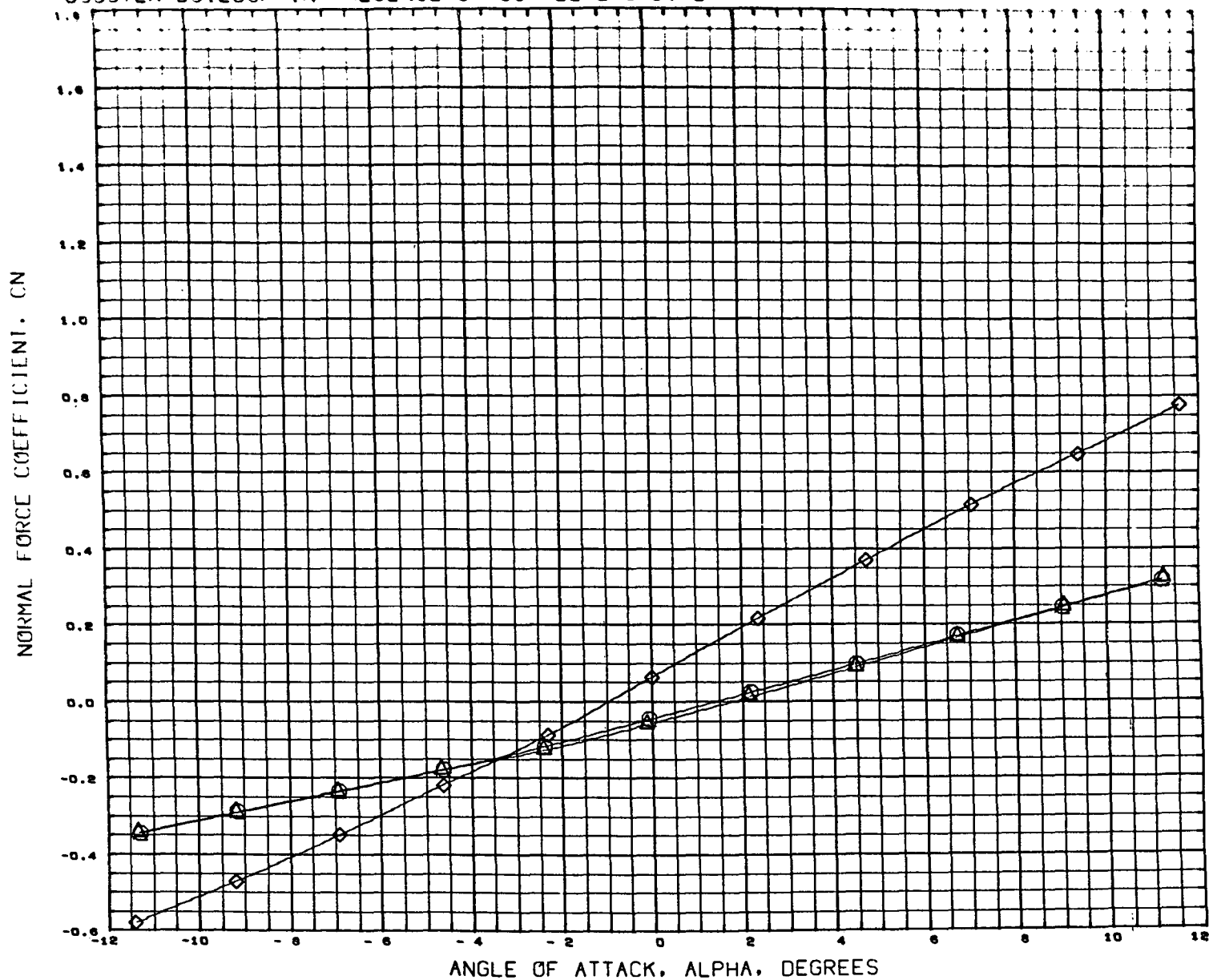
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|----------|--------|---|
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| (H3215A) | △ | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.102

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



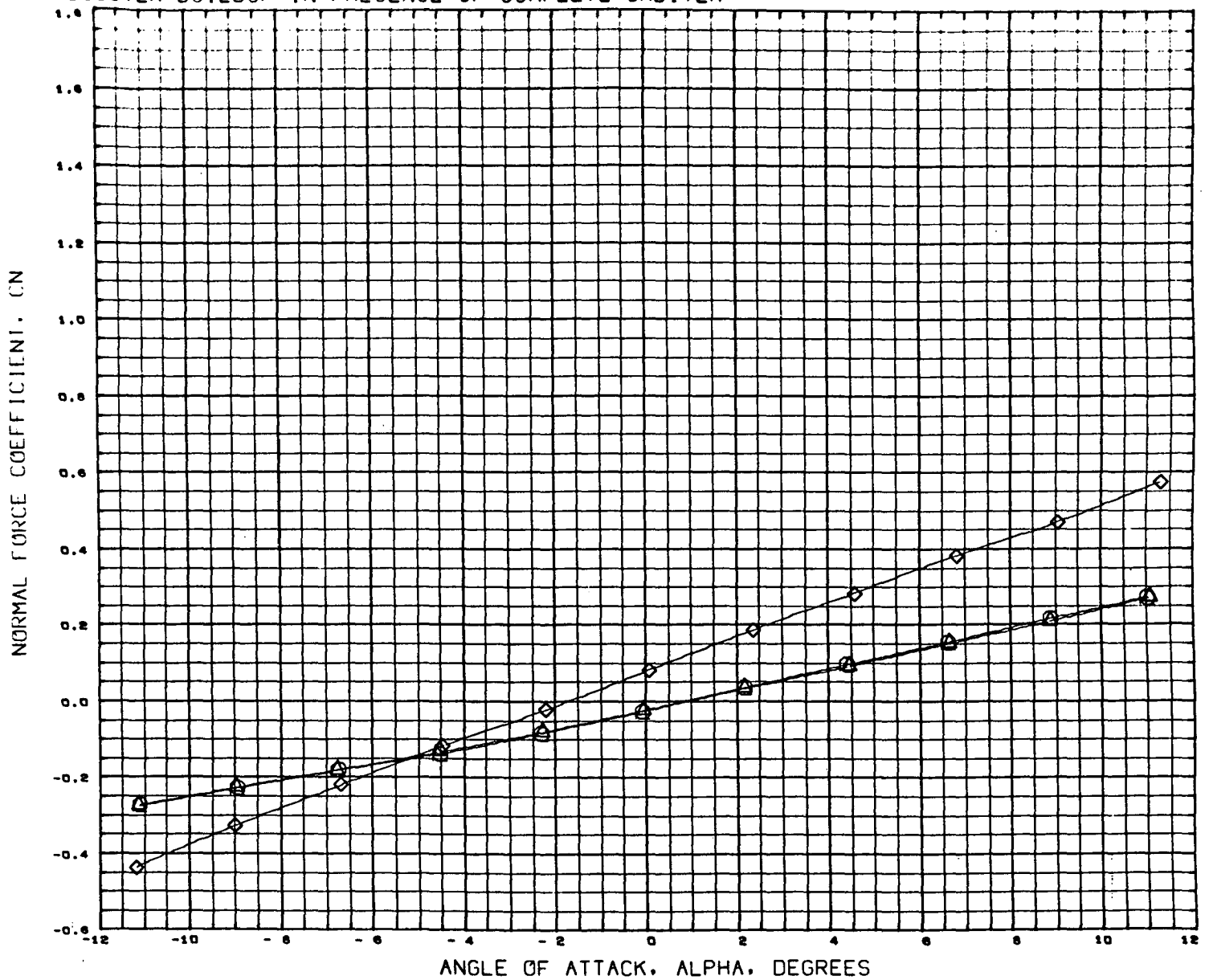
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3214A) ○ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (H3215A) △ | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (N3222A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
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| SCALE | 0.0035 SCALE |

MACH 1.466

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



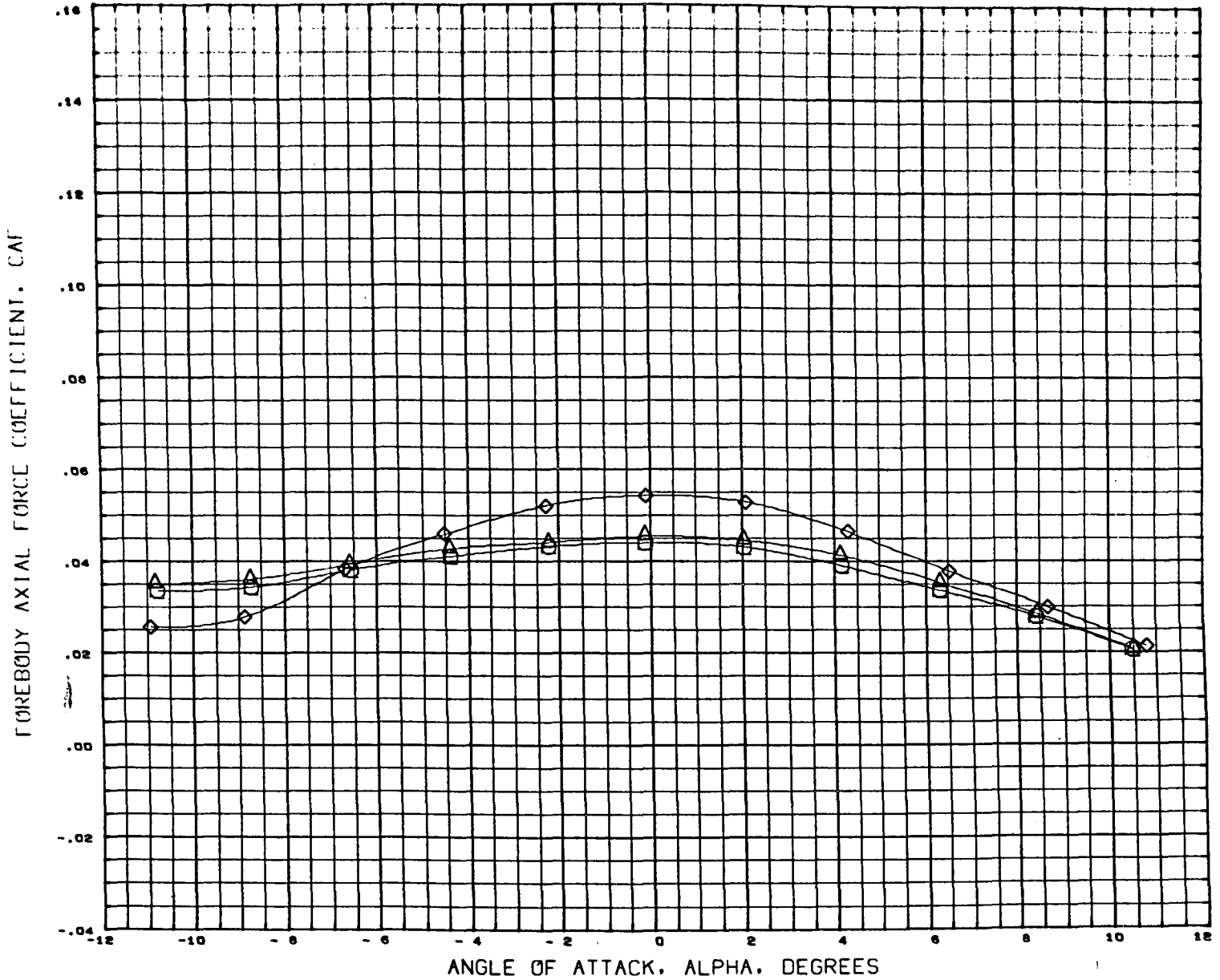
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|-----------------|---|
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | Sq IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.956

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

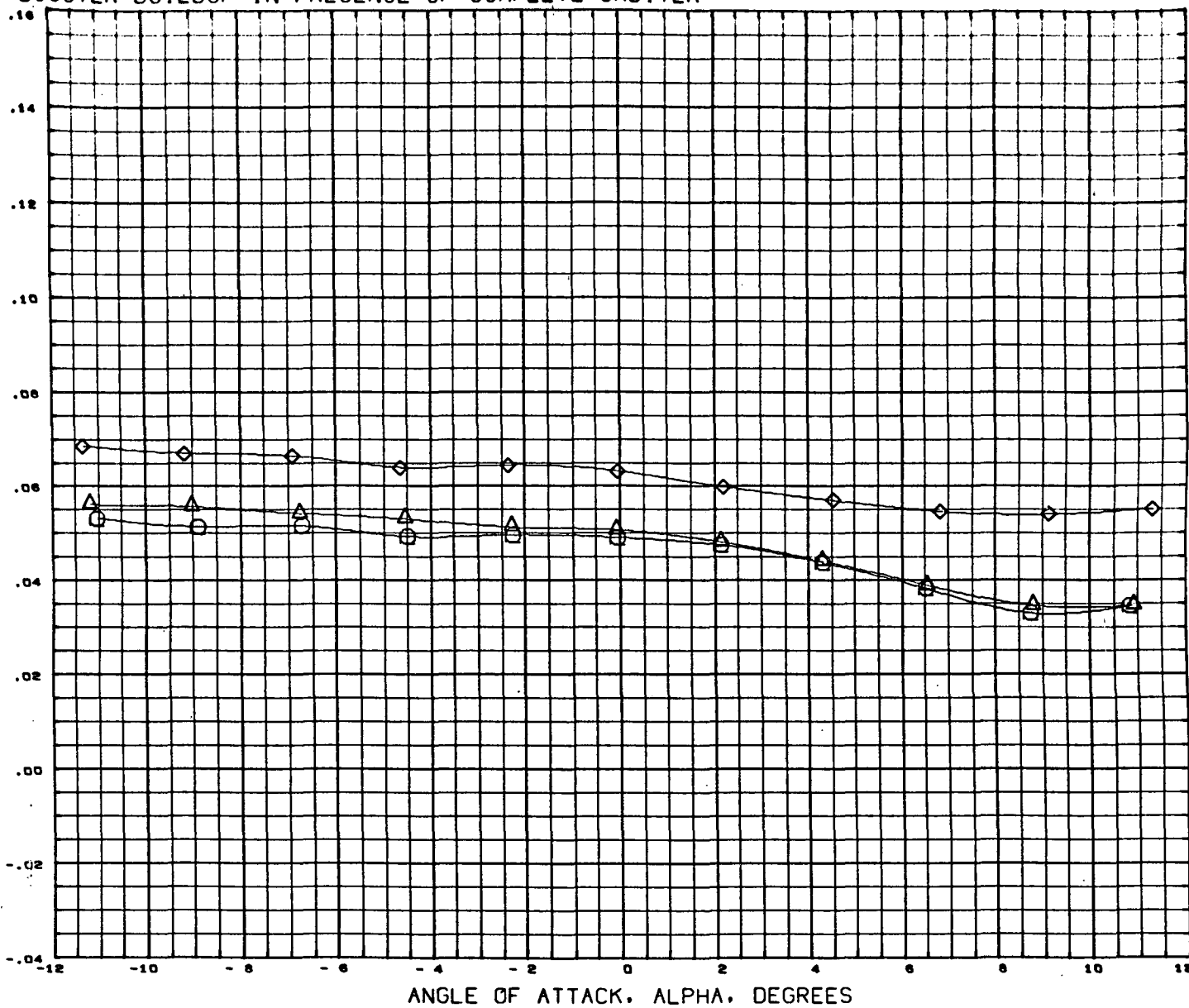
| BETA | ELVORB |
|-------|--------|
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| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.604

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



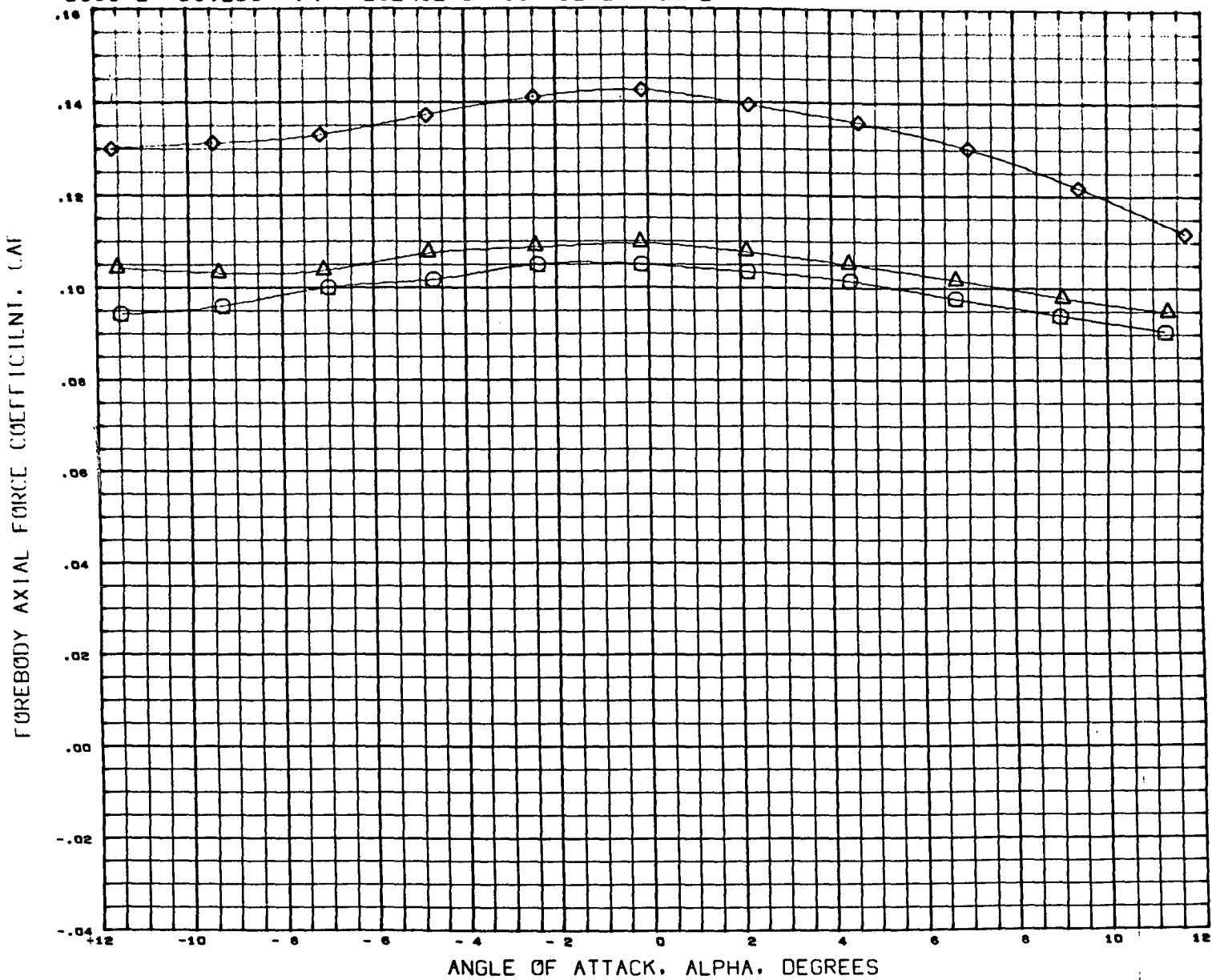
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|-----------------|---|
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| (H3215A) △ | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
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| ZMRF | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



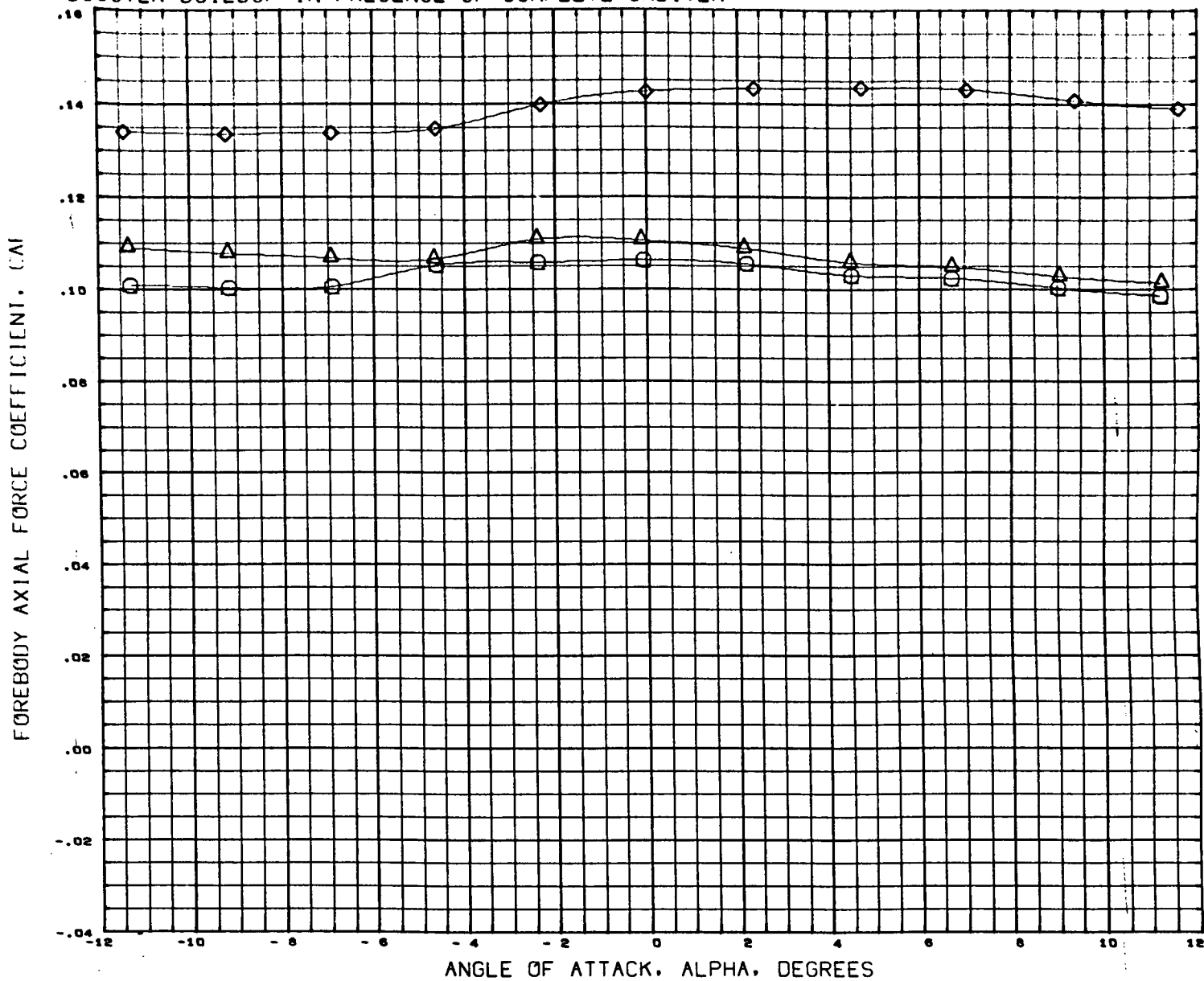
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|-----------------|---|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0930 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
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| SCALE | 0.0035 | SCALE |

MACH 1.102

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



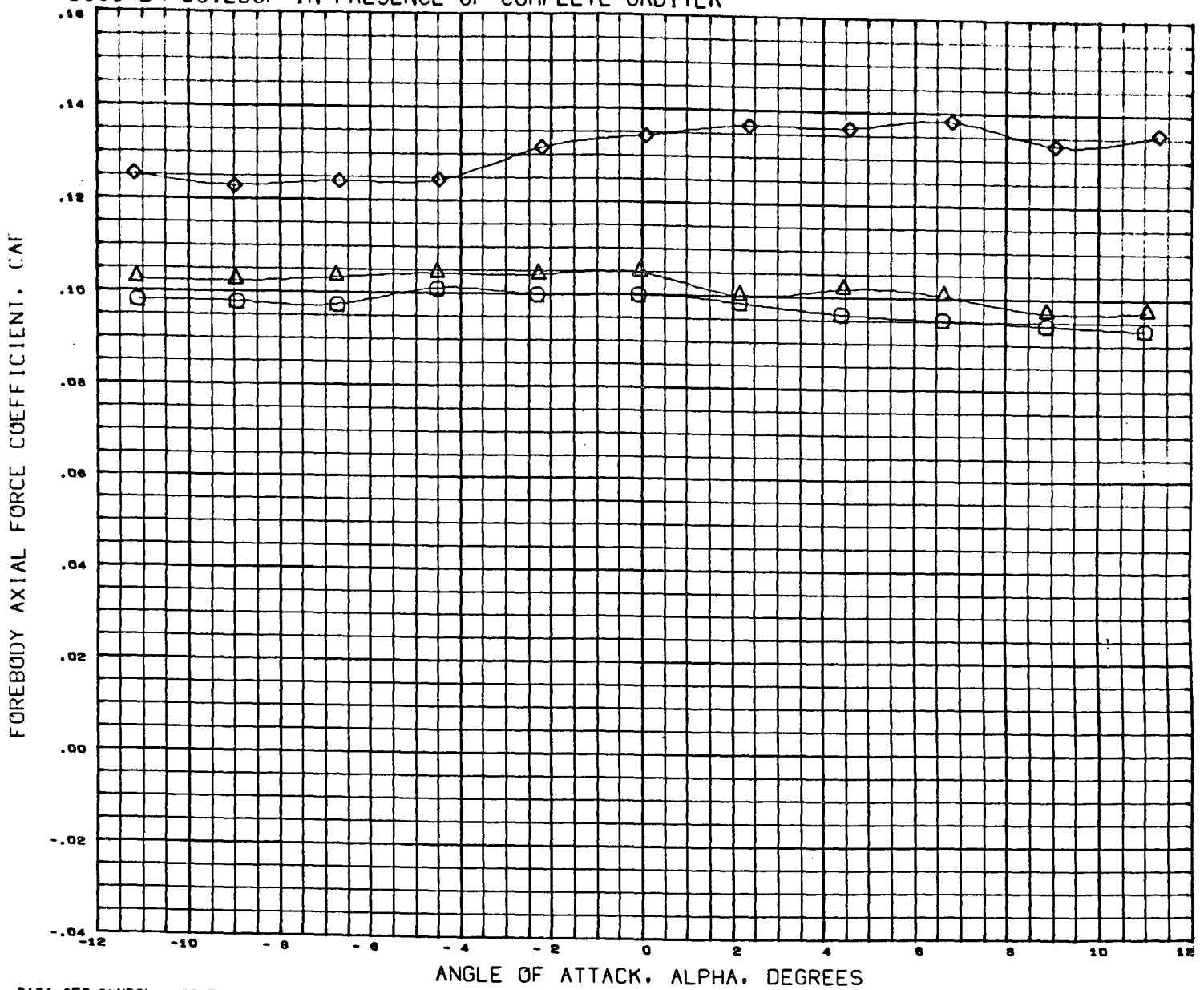
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 19.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRF | 0.0000 |
| YMRF | 0.0000 |
| ZMRF | 0.0000 |
| SCALE | 0.0039 SCALE |

MACH 1.468

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



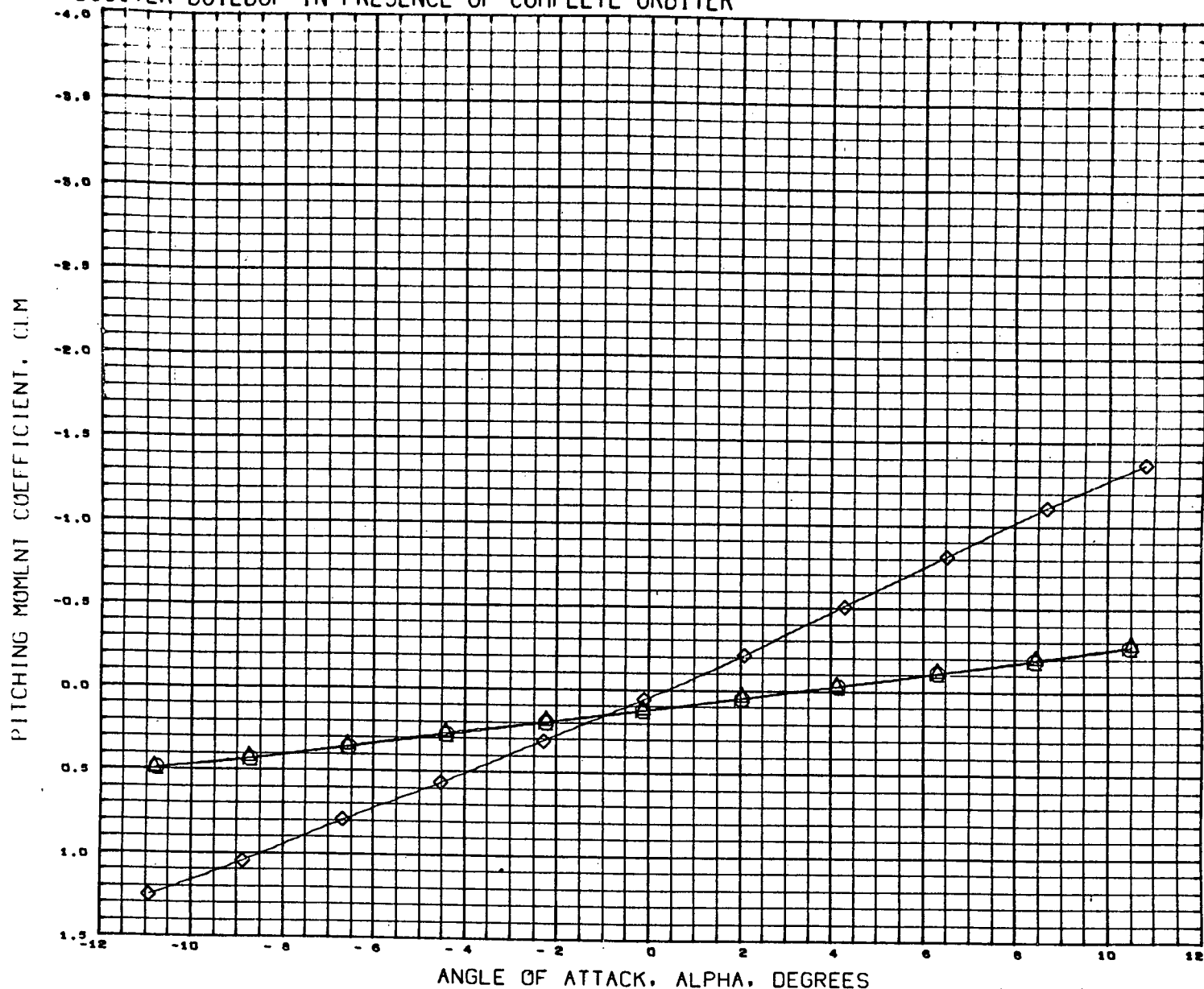
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0039 SCALE |

MACH 1.956

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



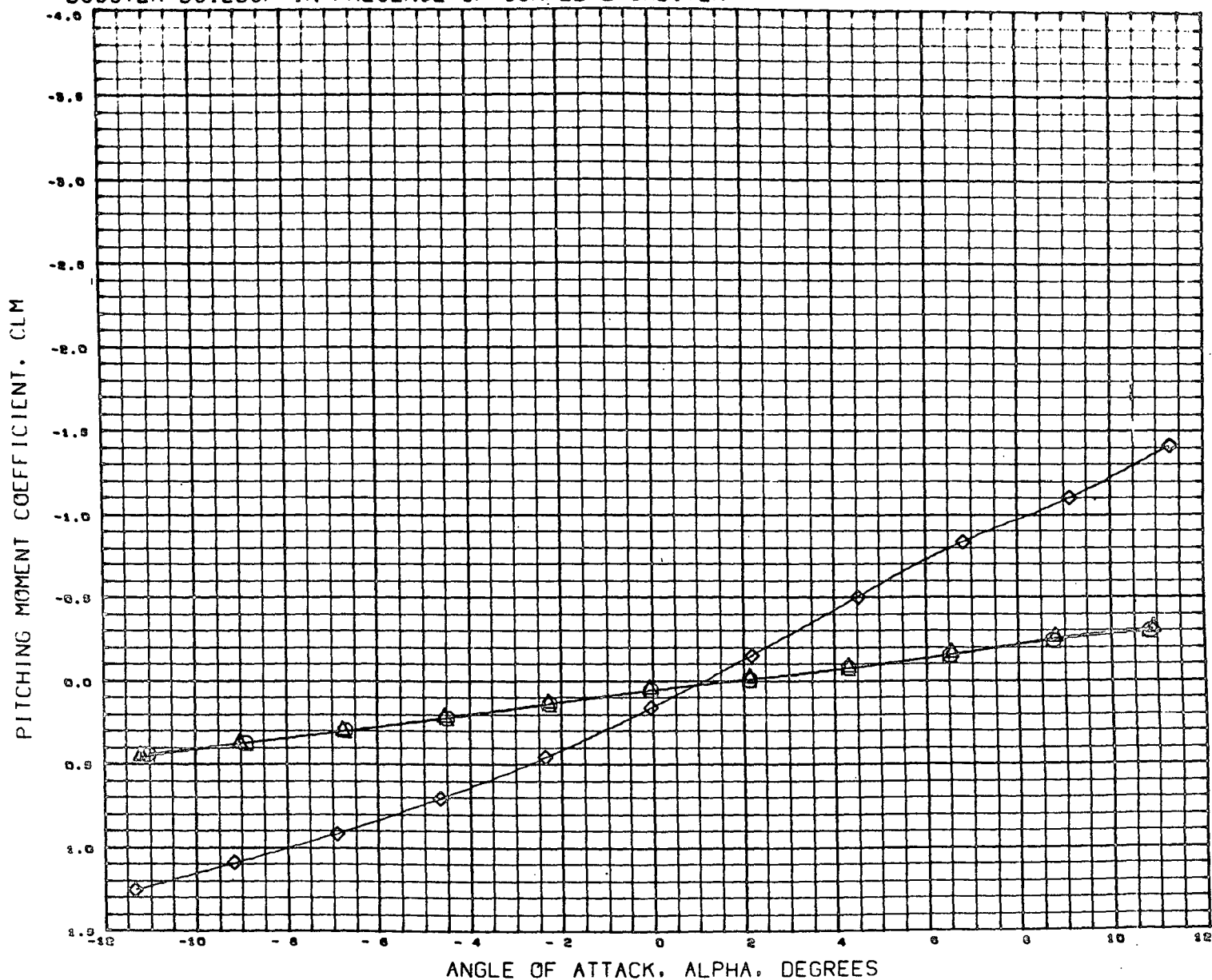
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.004

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



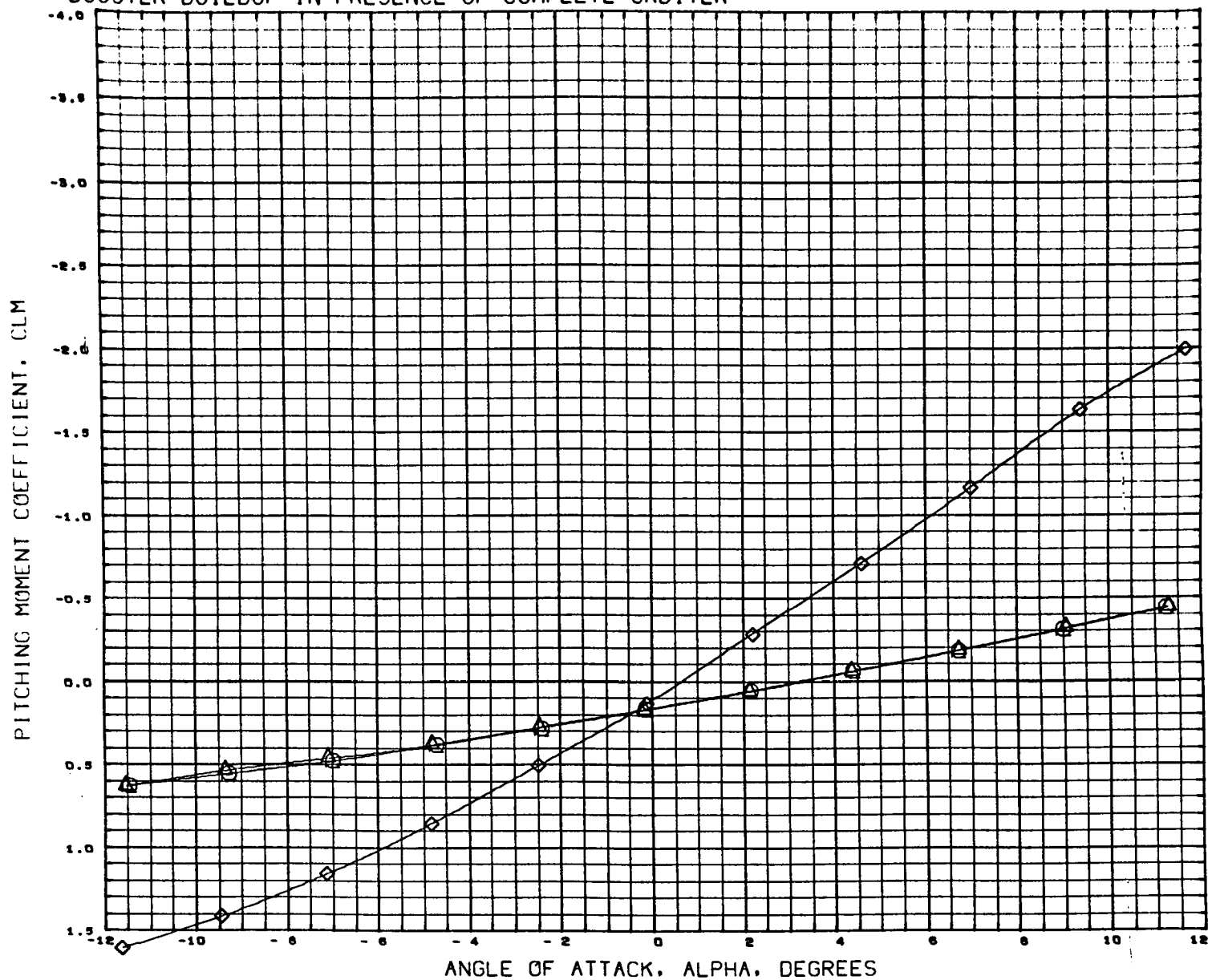
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| (N3219A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
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| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 0.697

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



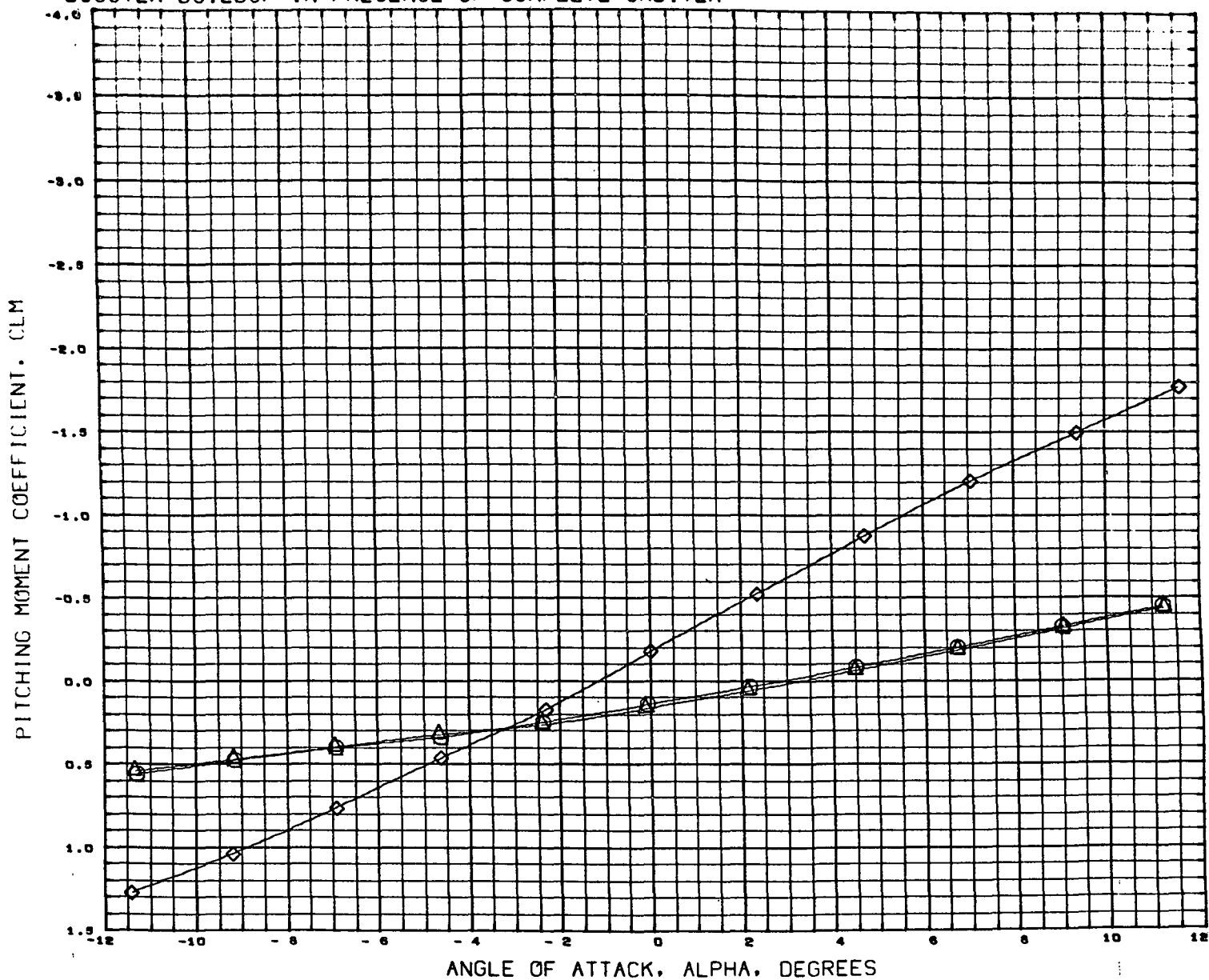
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4E+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
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| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.102

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



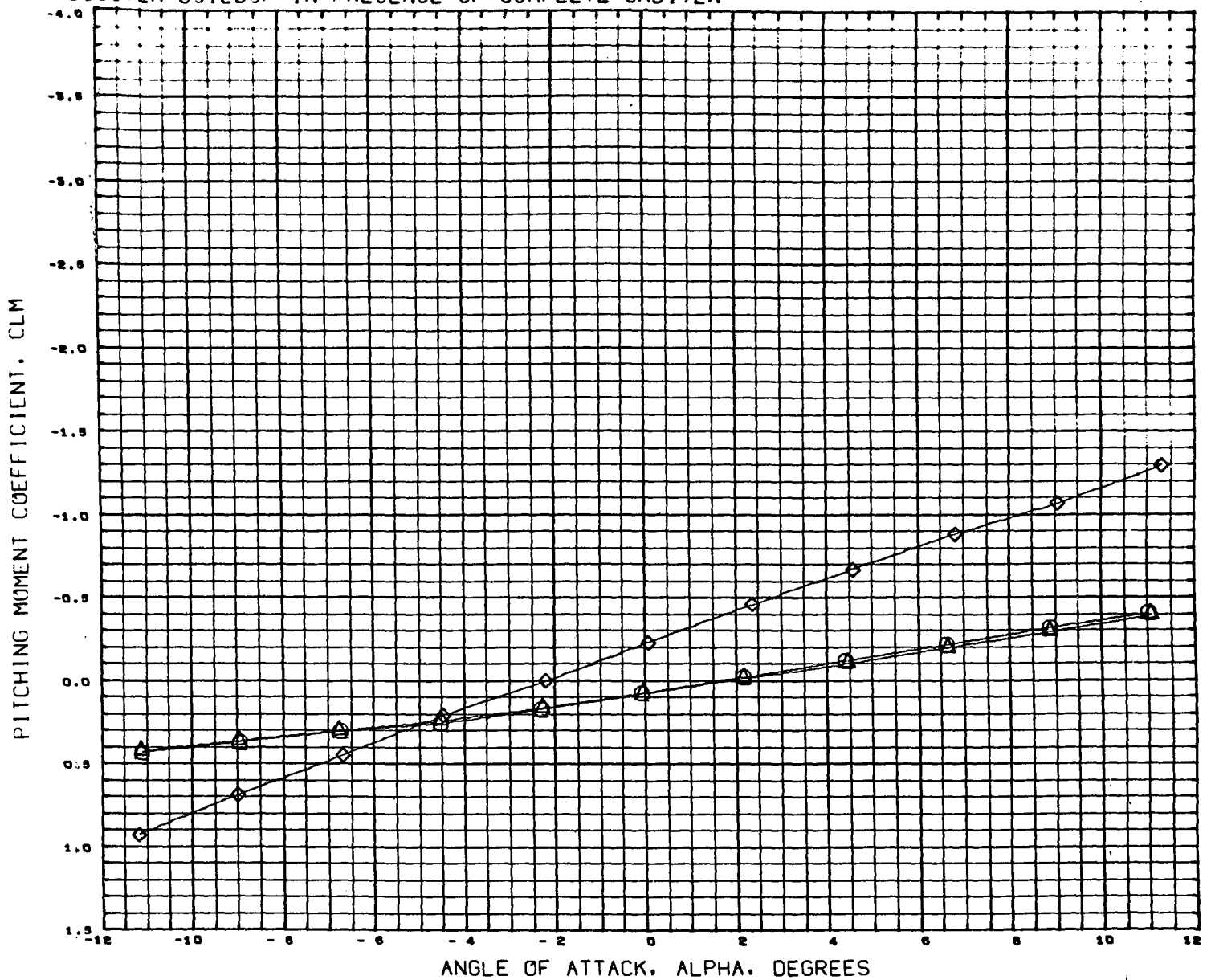
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| (H3219A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
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| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.468

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



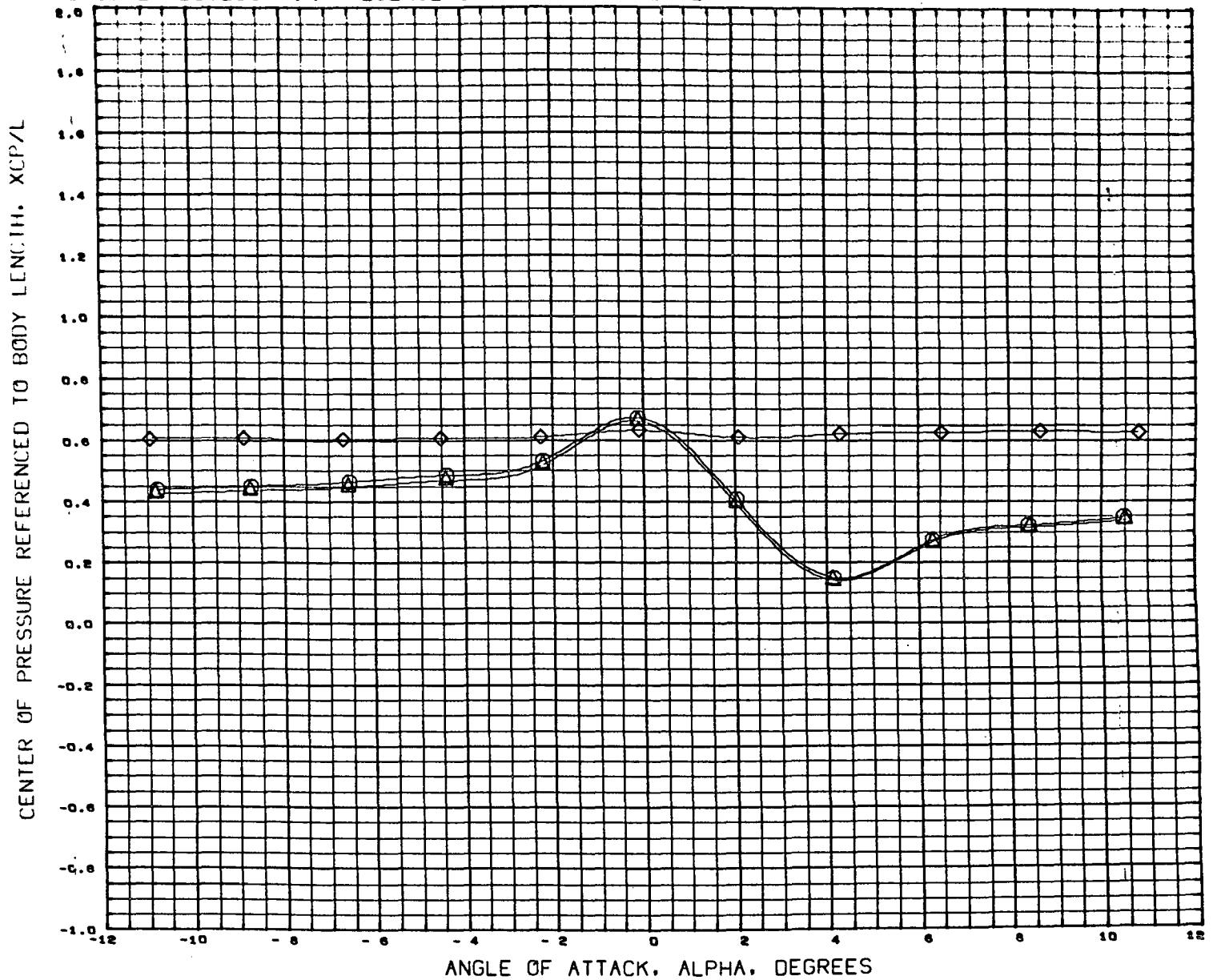
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|-----------------|---|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.956

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



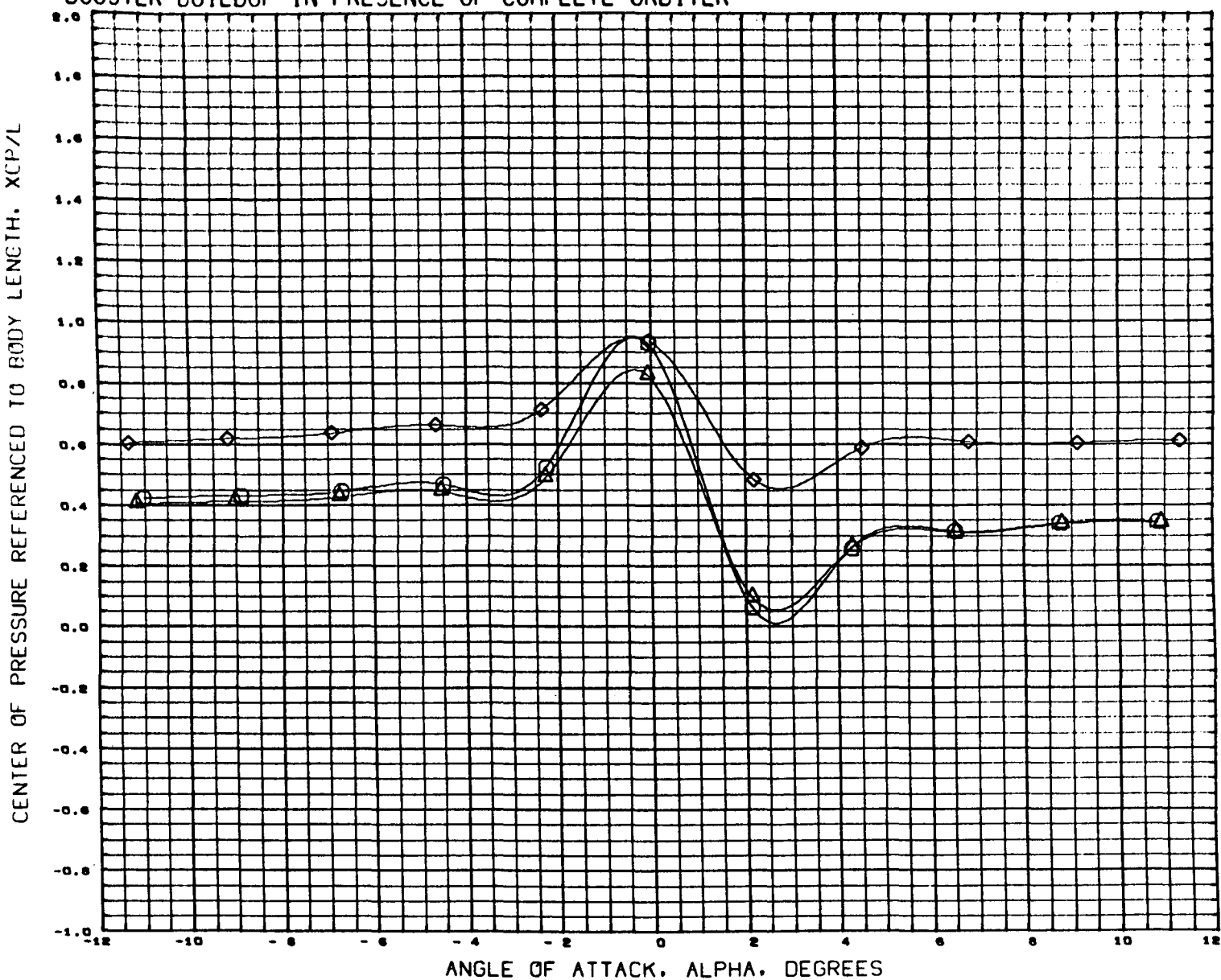
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 0.604

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



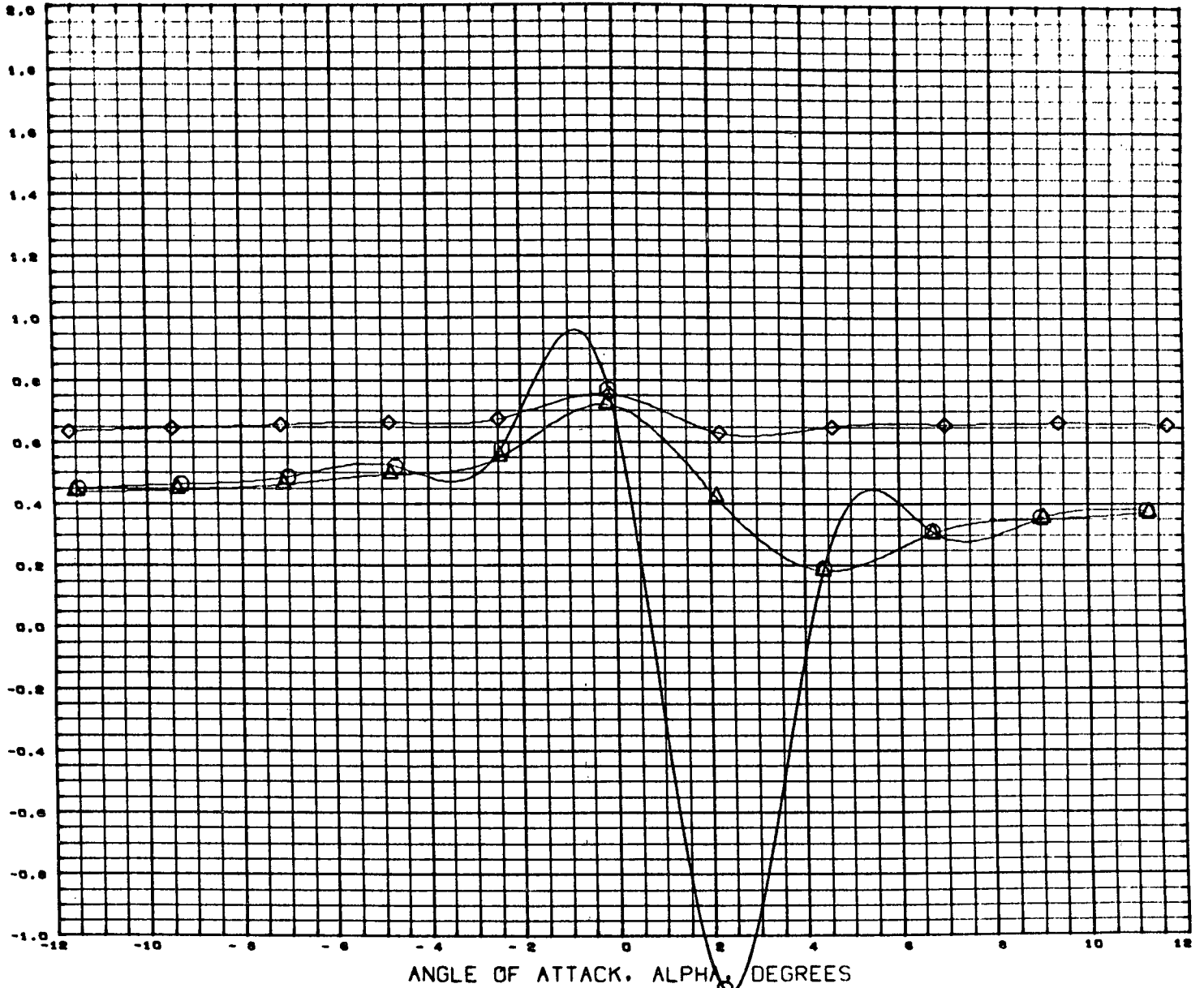
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (NS214A) | MSFC490 NR/GD LAUNCH B2D+B5W17V17 |
| (NS215A) | MSFC490 NR/GD LAUNCH B2D+C4B+B5W17V17 |
| (NS222A) | MSFC490 NR/GD LAUNCH B2D+C4B+W14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 0.0990 | INCHES |
| XMRR | 0.0000 | |
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| ZMRR | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



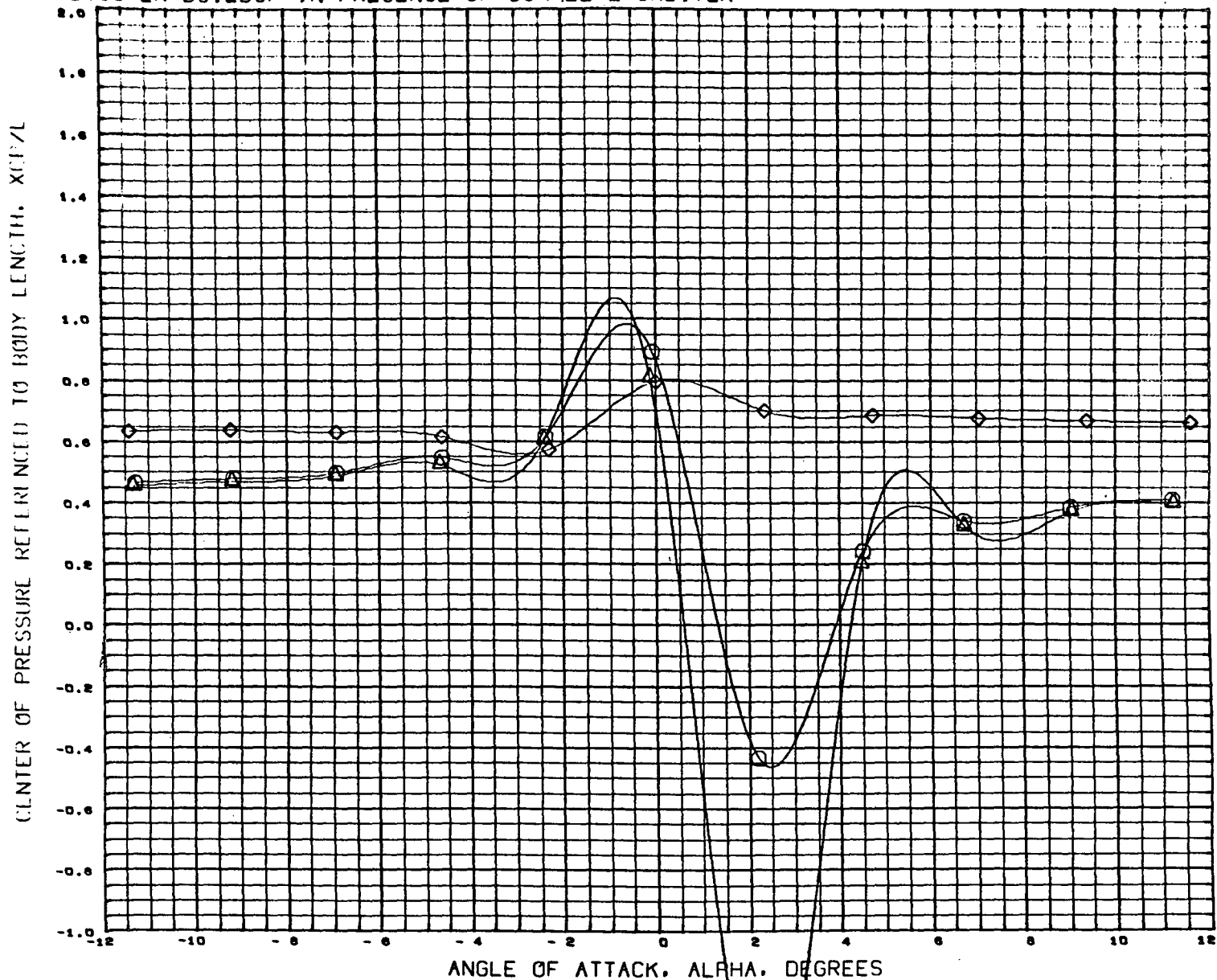
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|-----------------|---|
| (NS214A) | M8PC490 NR/GD LAUNCH B20+B5W17V17 |
| (NS219A) | M8PC490 NR/GD LAUNCH B20C48+B5W17V17 |
| (NS222A) | M8PC490 NR/GD LAUNCH B20C48W14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 19.6560 | 50 IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.102

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



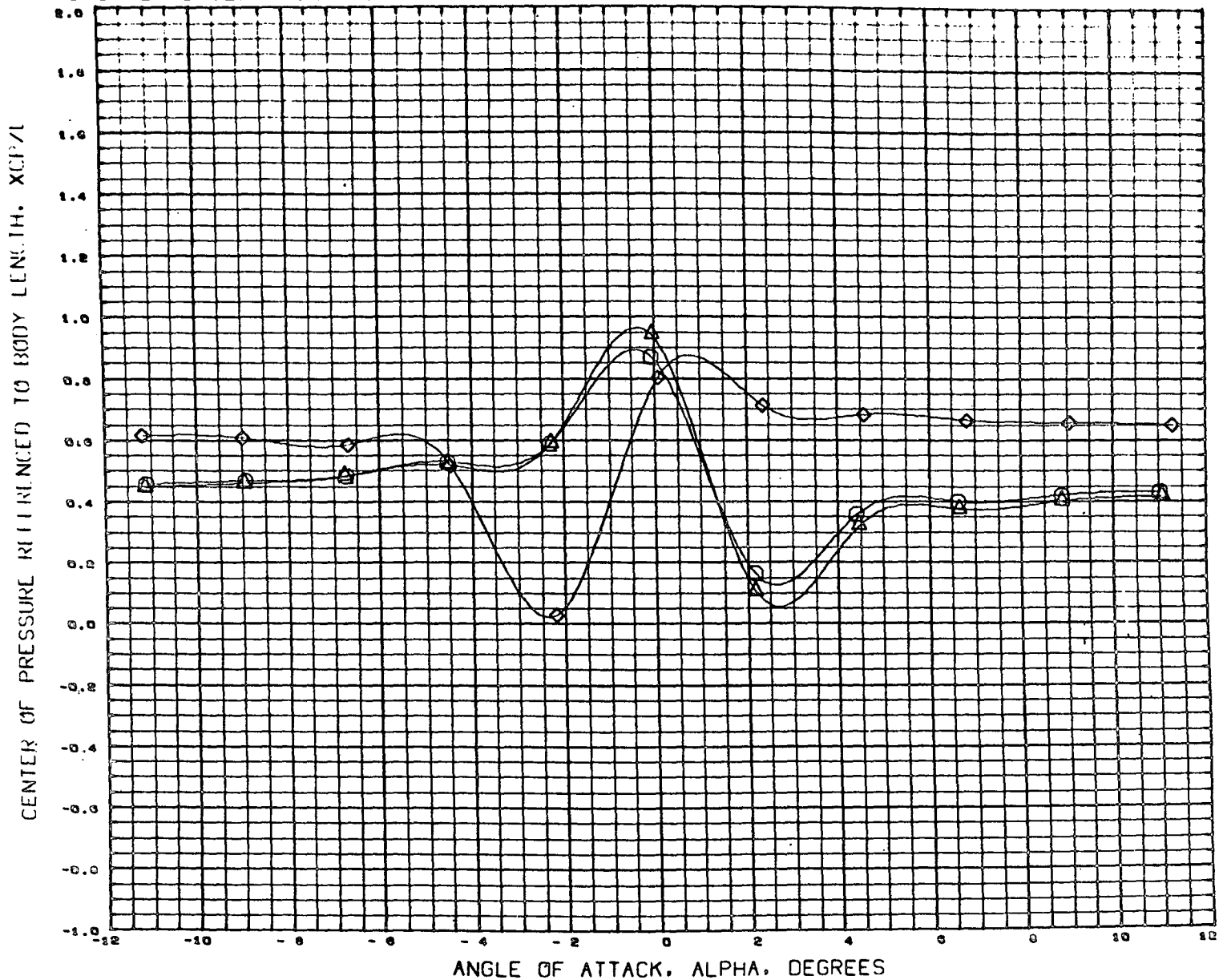
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|-----------------|---|
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 19.6960 SQ IN |
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| BREF | 0.0950 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.468

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B3W17V17 |
| (H3215A) | MSFC490 NR/GD LAUNCH B20C4E+B3W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4E+14V8+B3W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| BREF | 6.0990 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.956

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



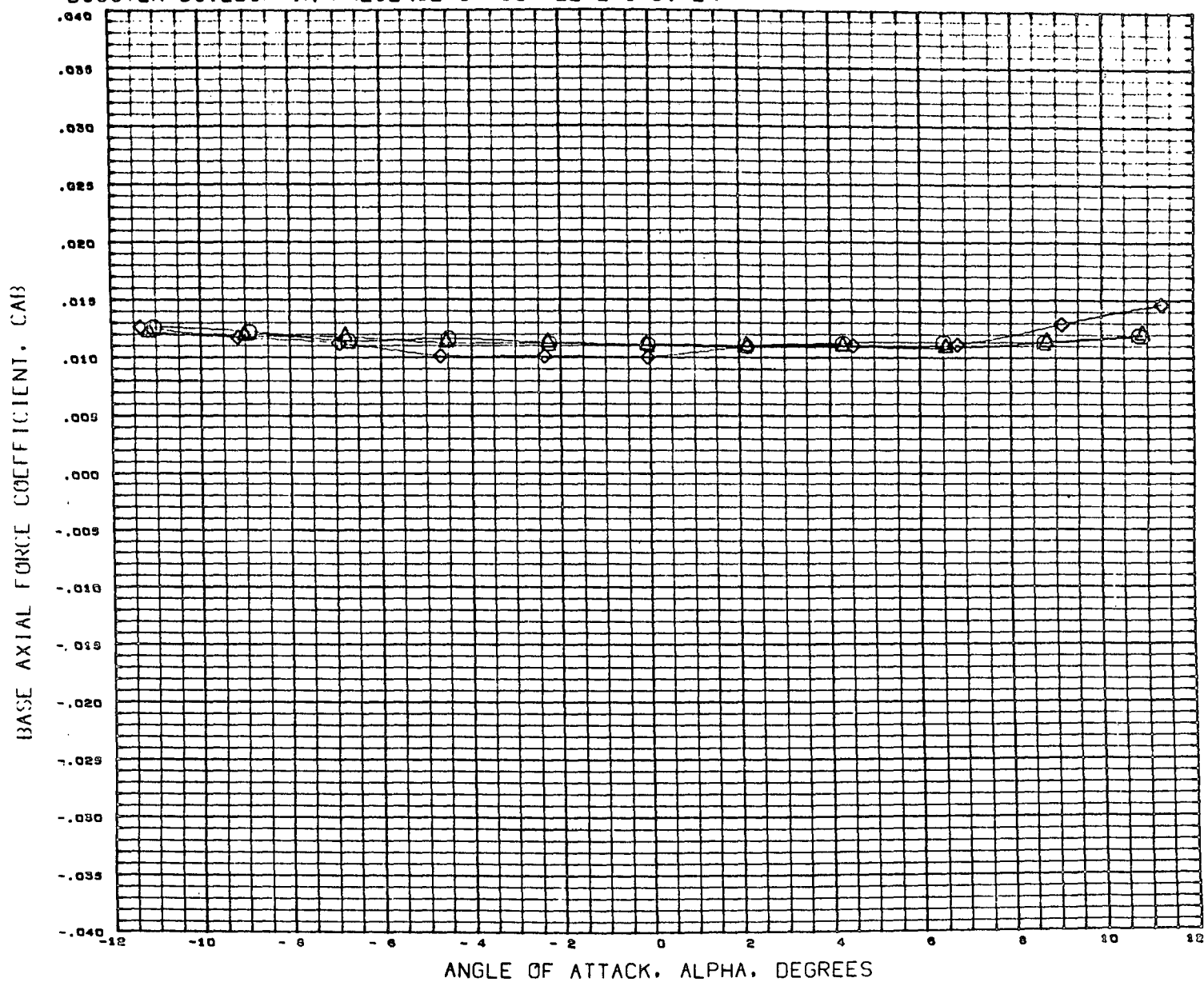
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|-----------------|---|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4E+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4EW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.604

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



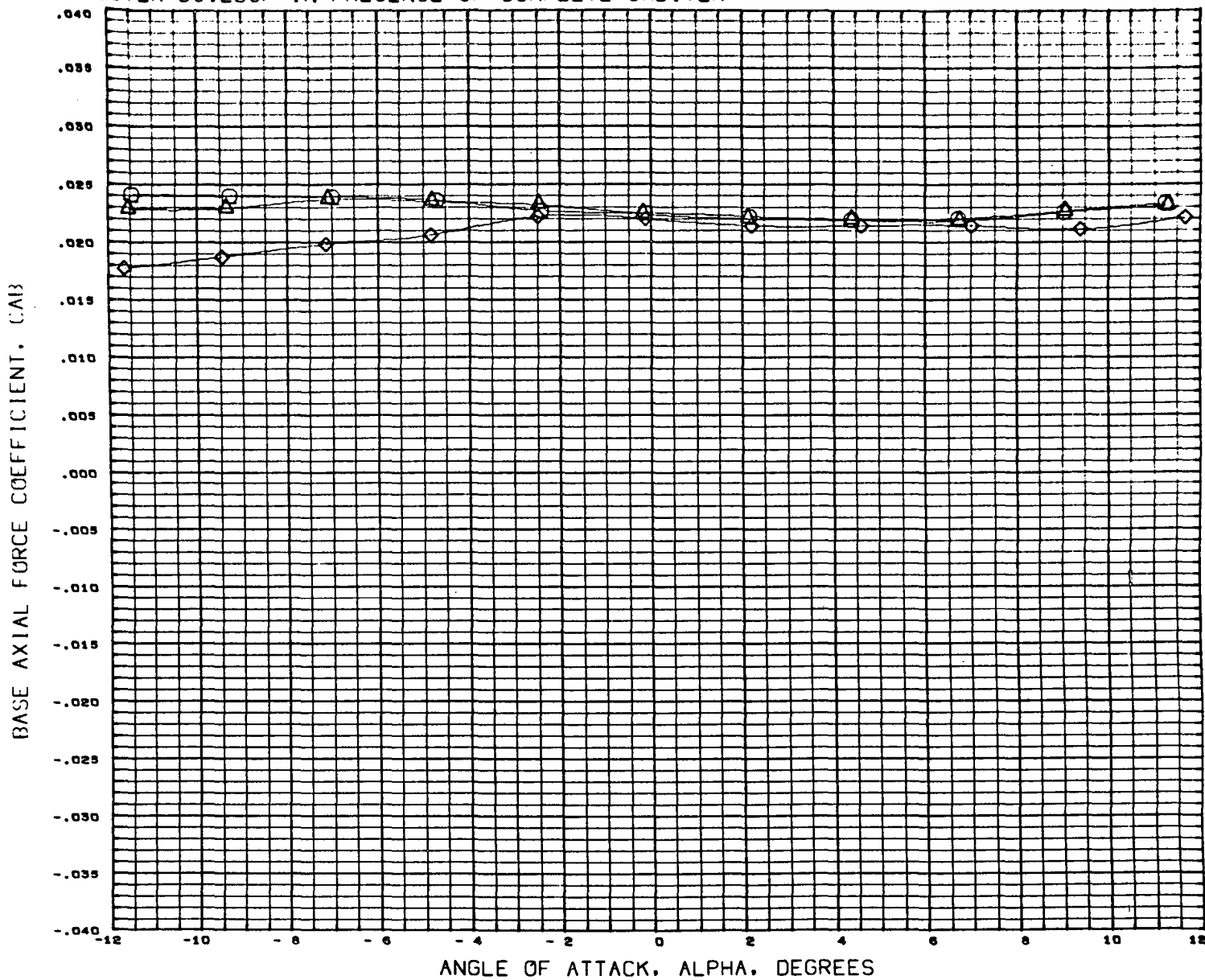
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|-----------------|---|
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| (H3219A) △ | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0038 | SCALE |

MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



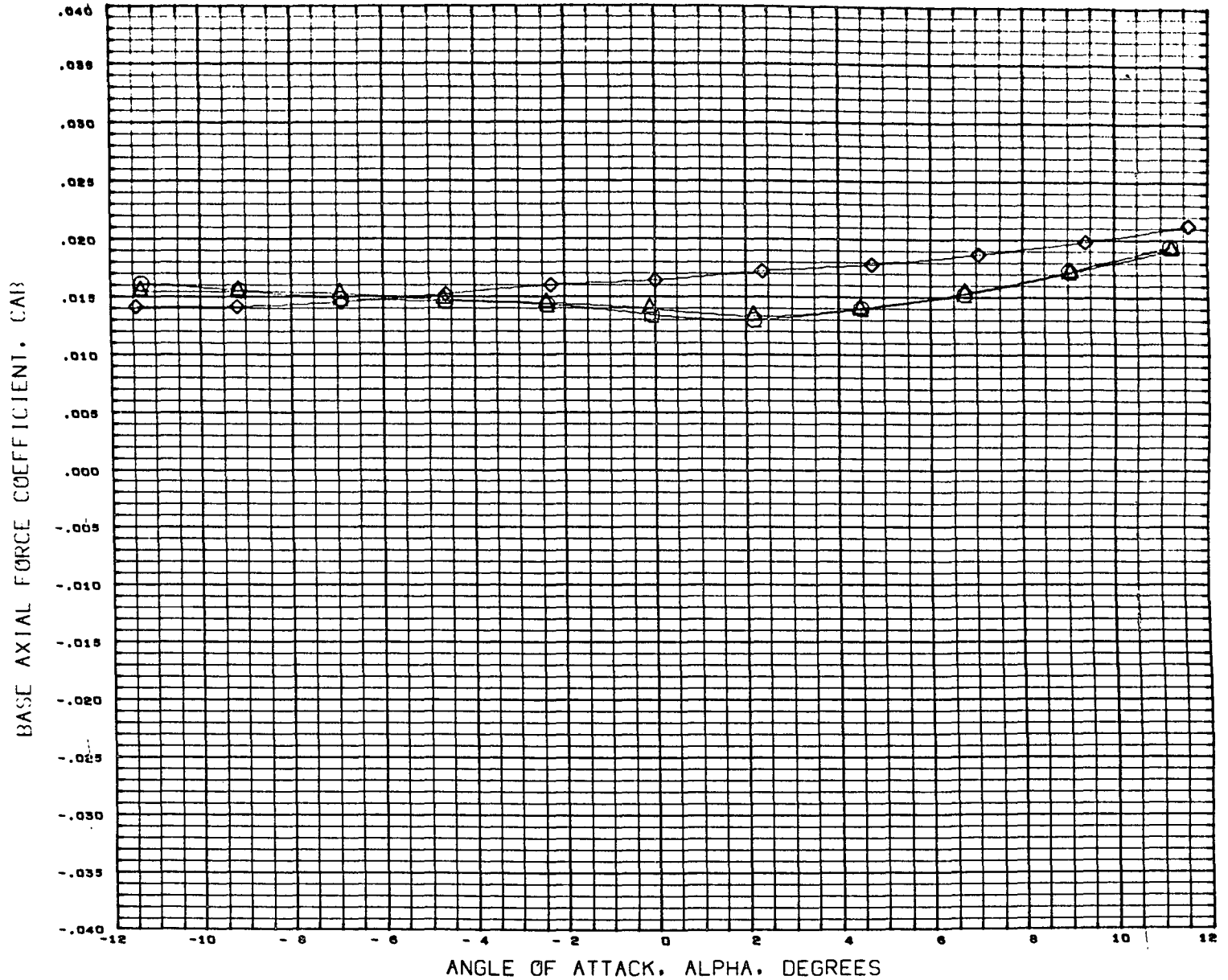
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.102

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



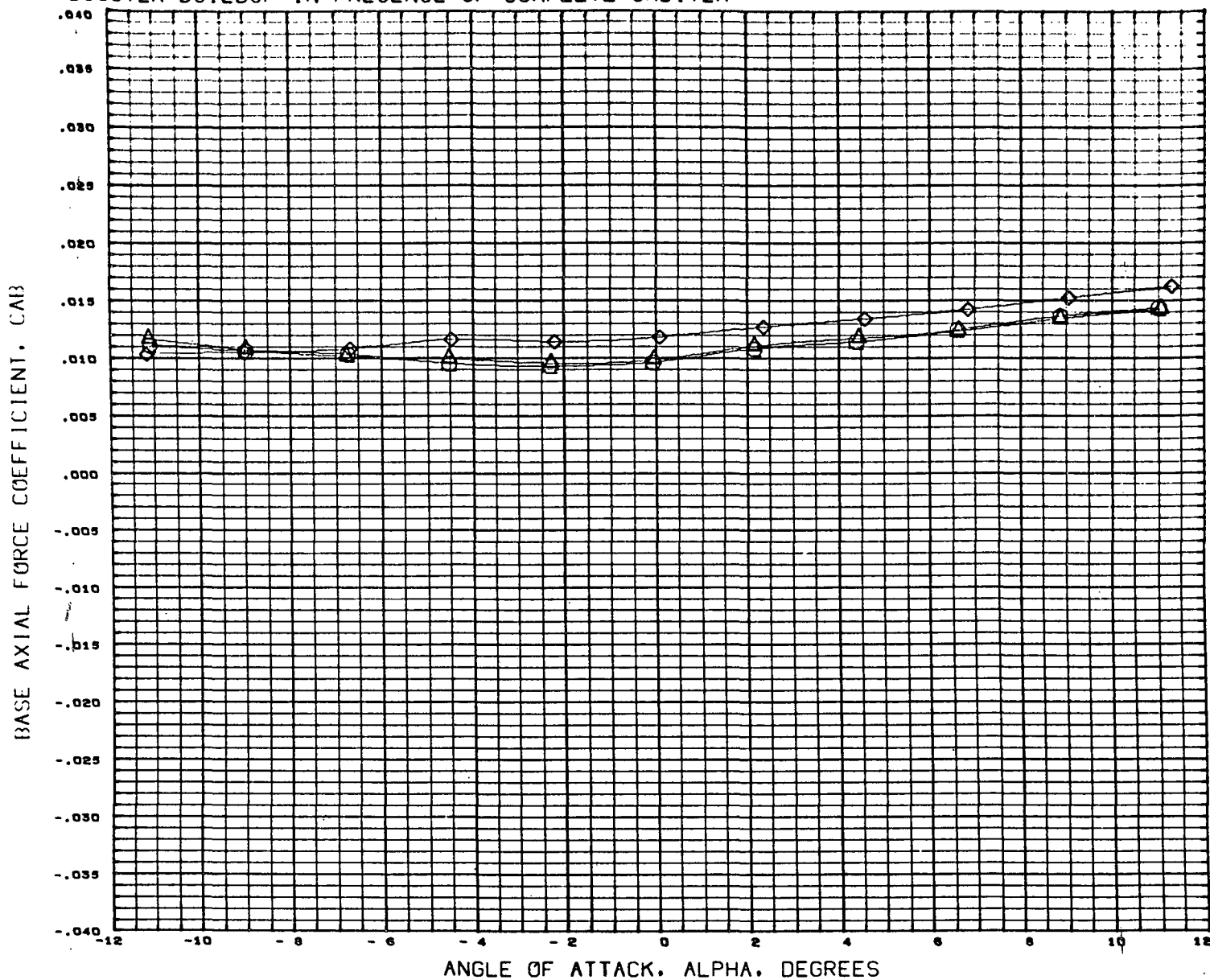
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.468

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (N3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (N3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

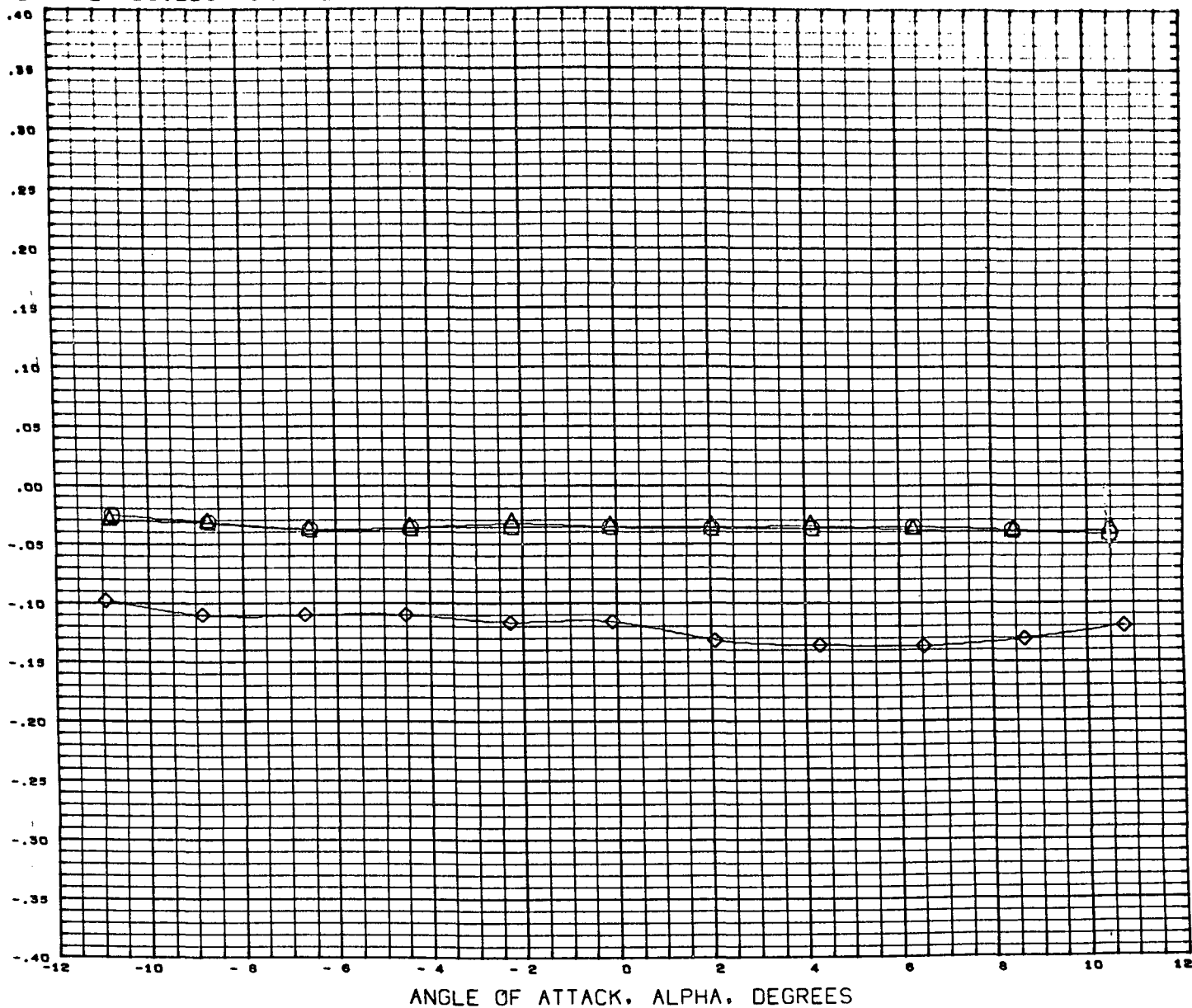
| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.956

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAD (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (13222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

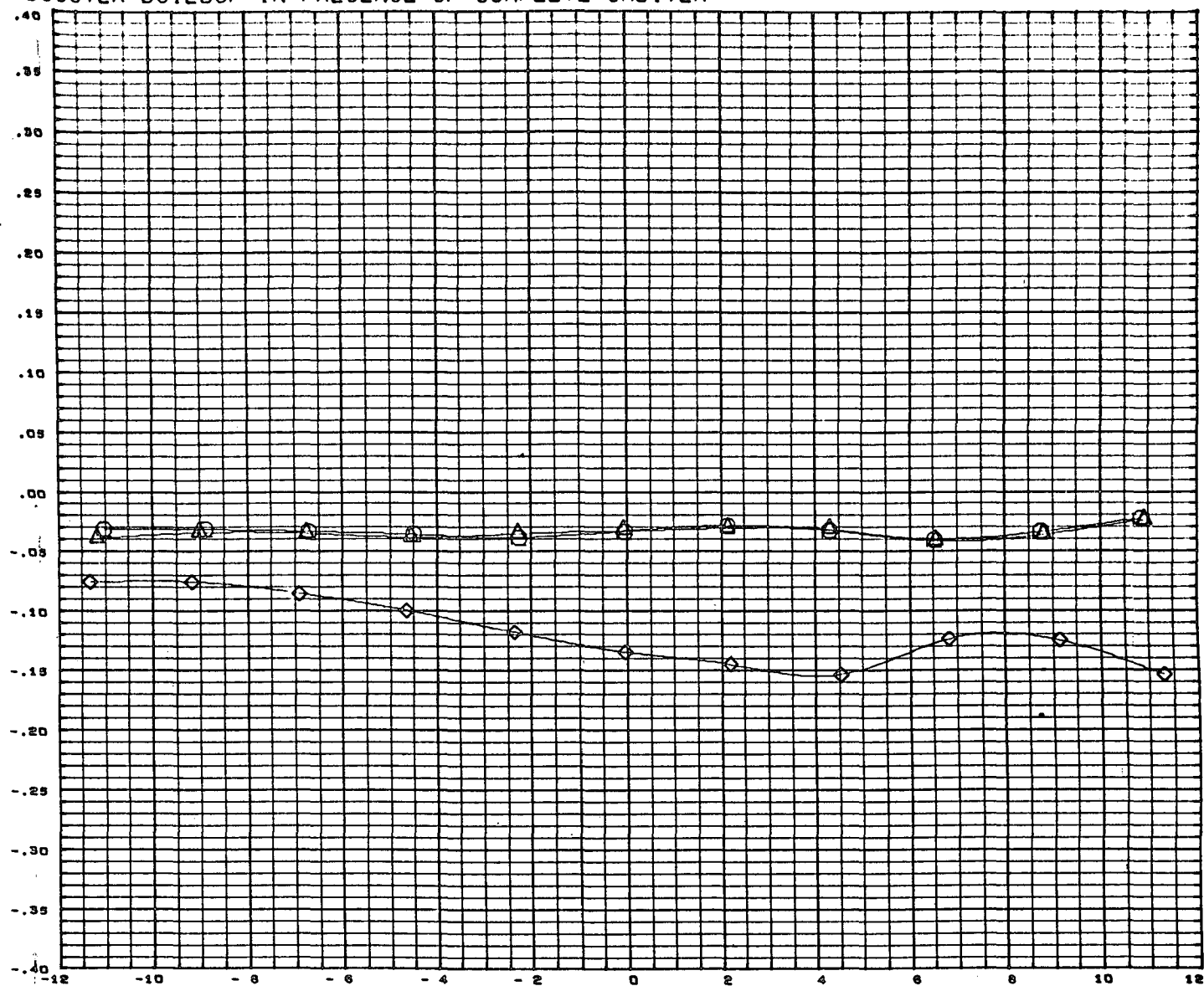
| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0033 SCALE |

MACH 0.604

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM_{AP} (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



ANGLE OF ATTACK, ALPHA, DEGREES

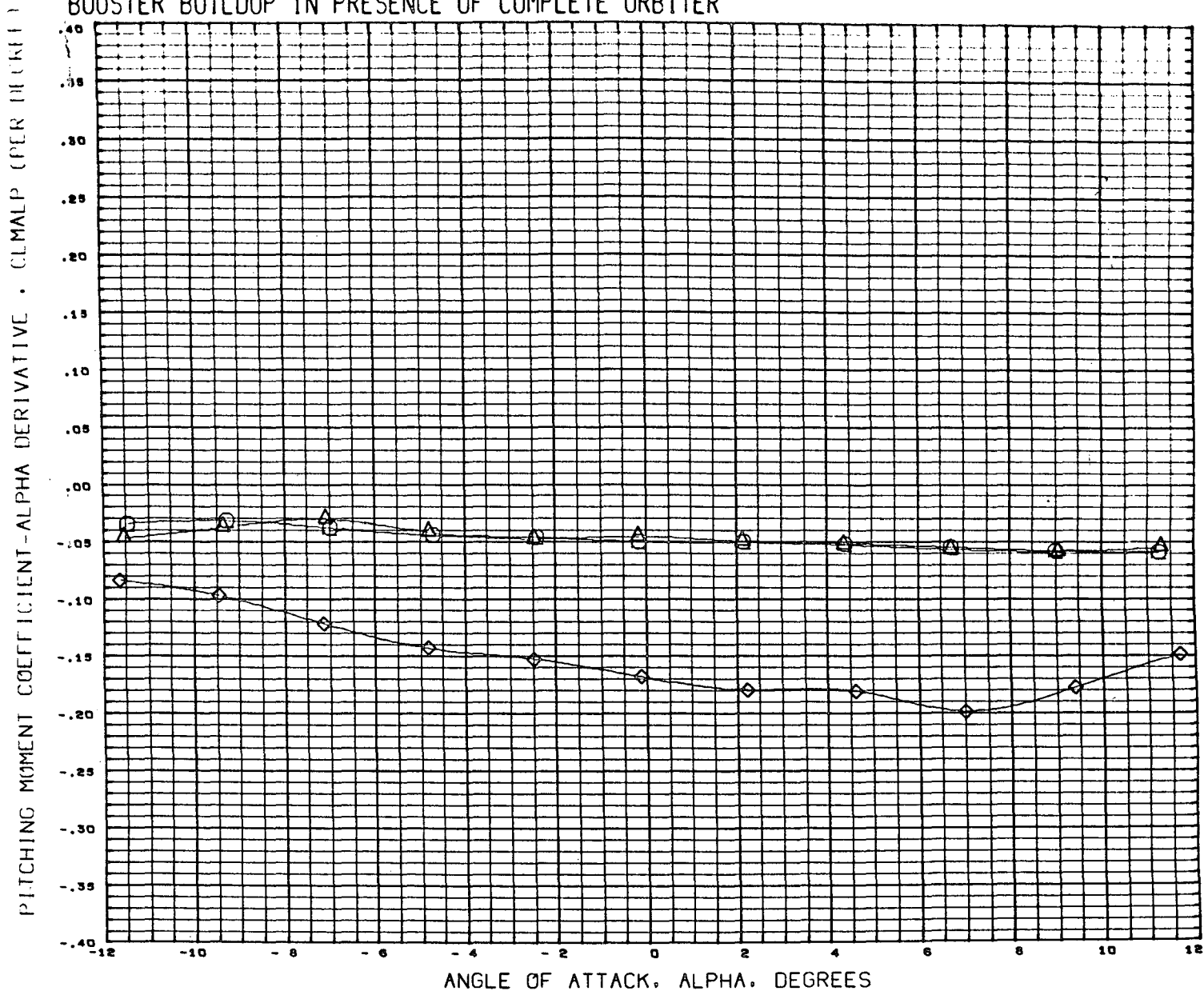
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (13222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0039 SCALE |

MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (13222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

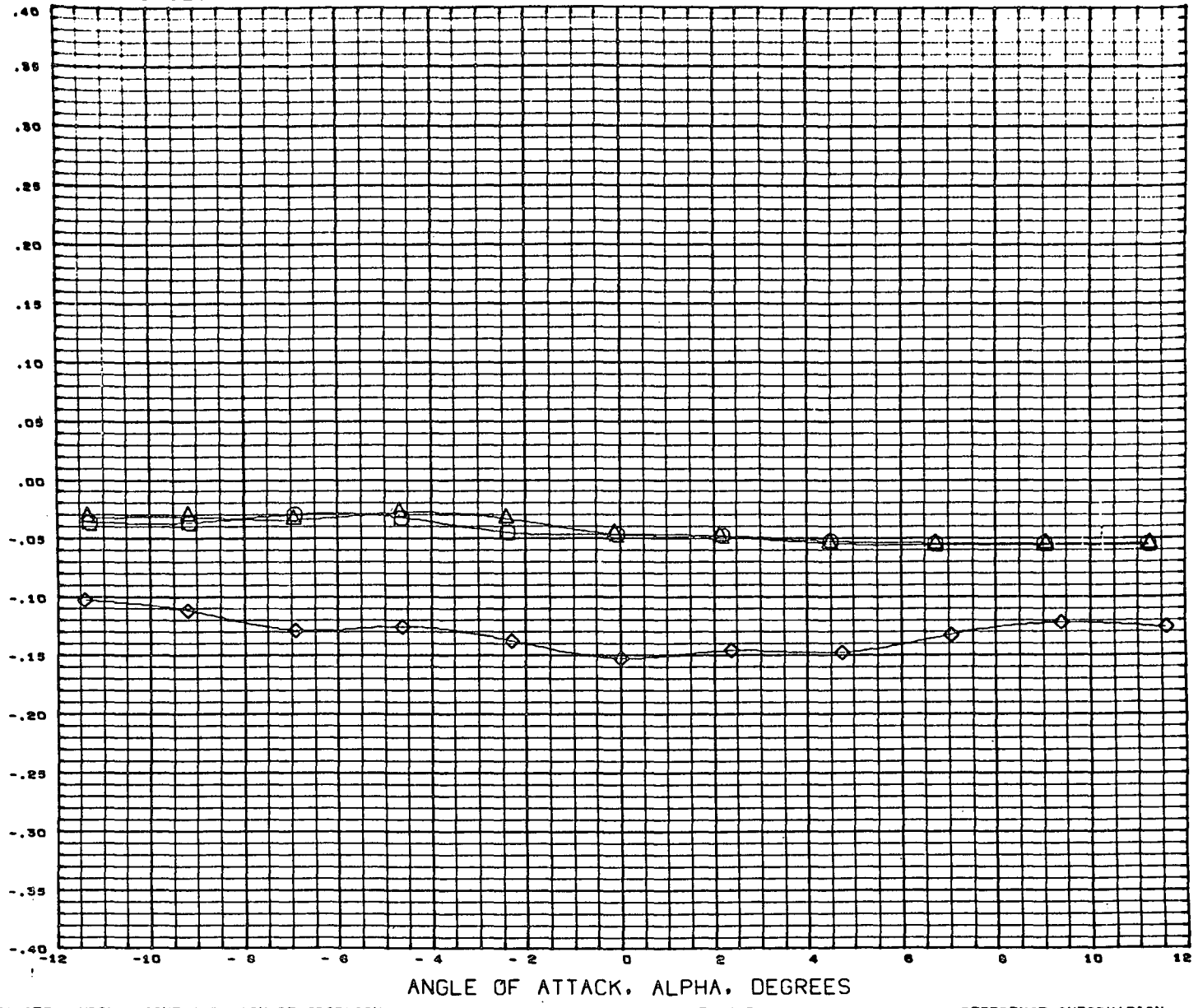
| BETA | ELVORB |
|-------|--------|
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| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.102

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM_{AP} (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (13222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

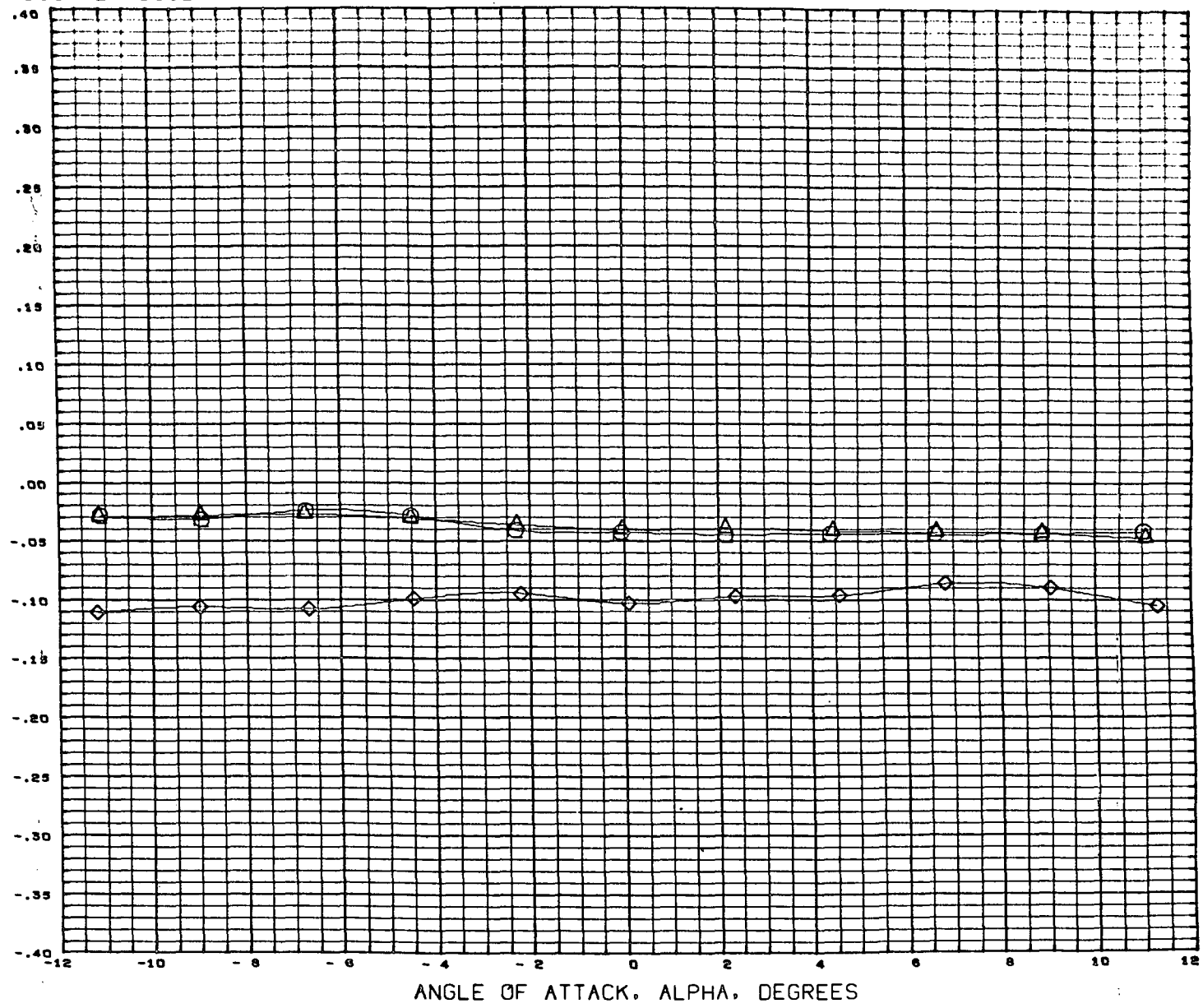
| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0930 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.468

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM_{ALP} (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



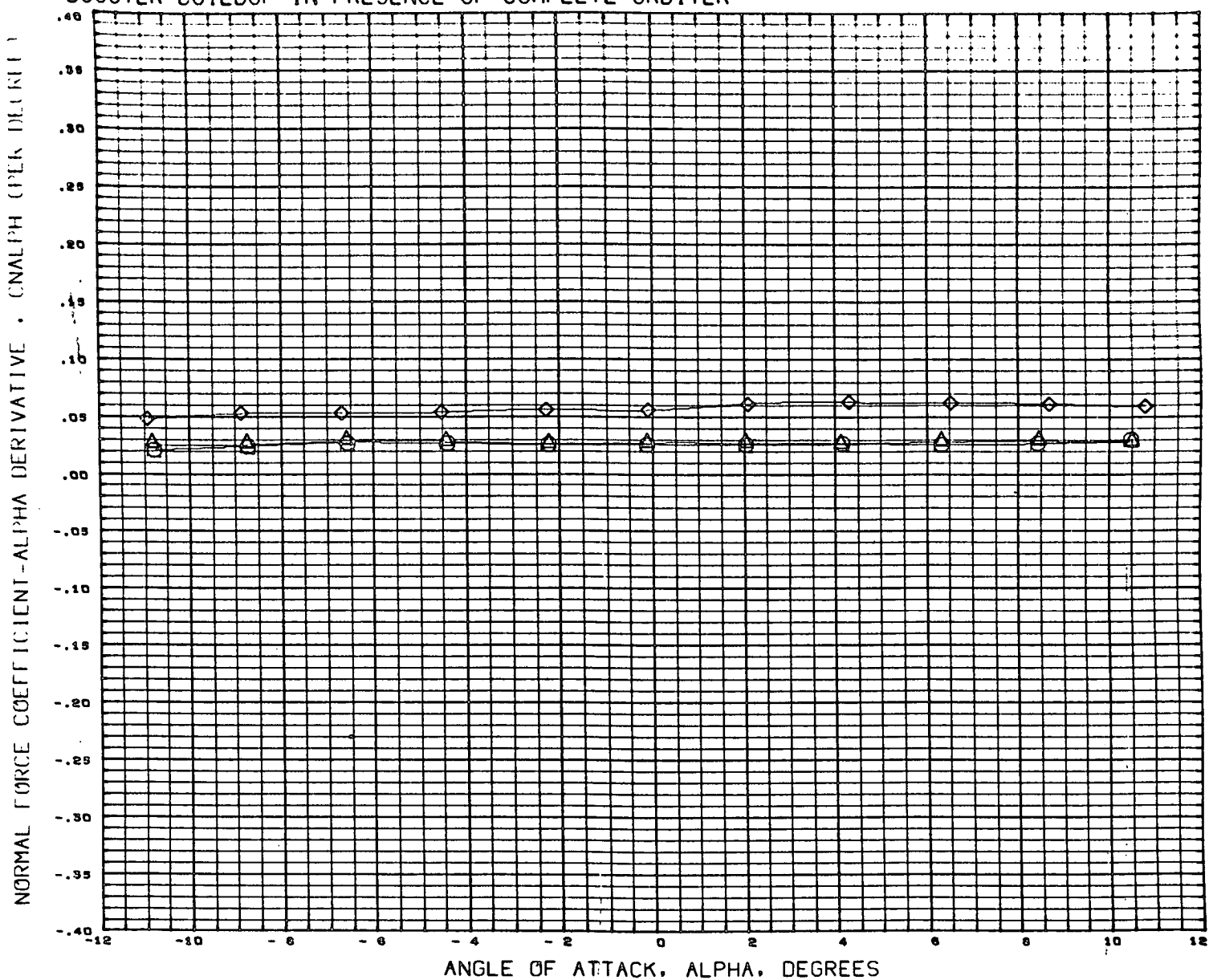
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|-----------------|---|
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (13222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.956

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (03222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

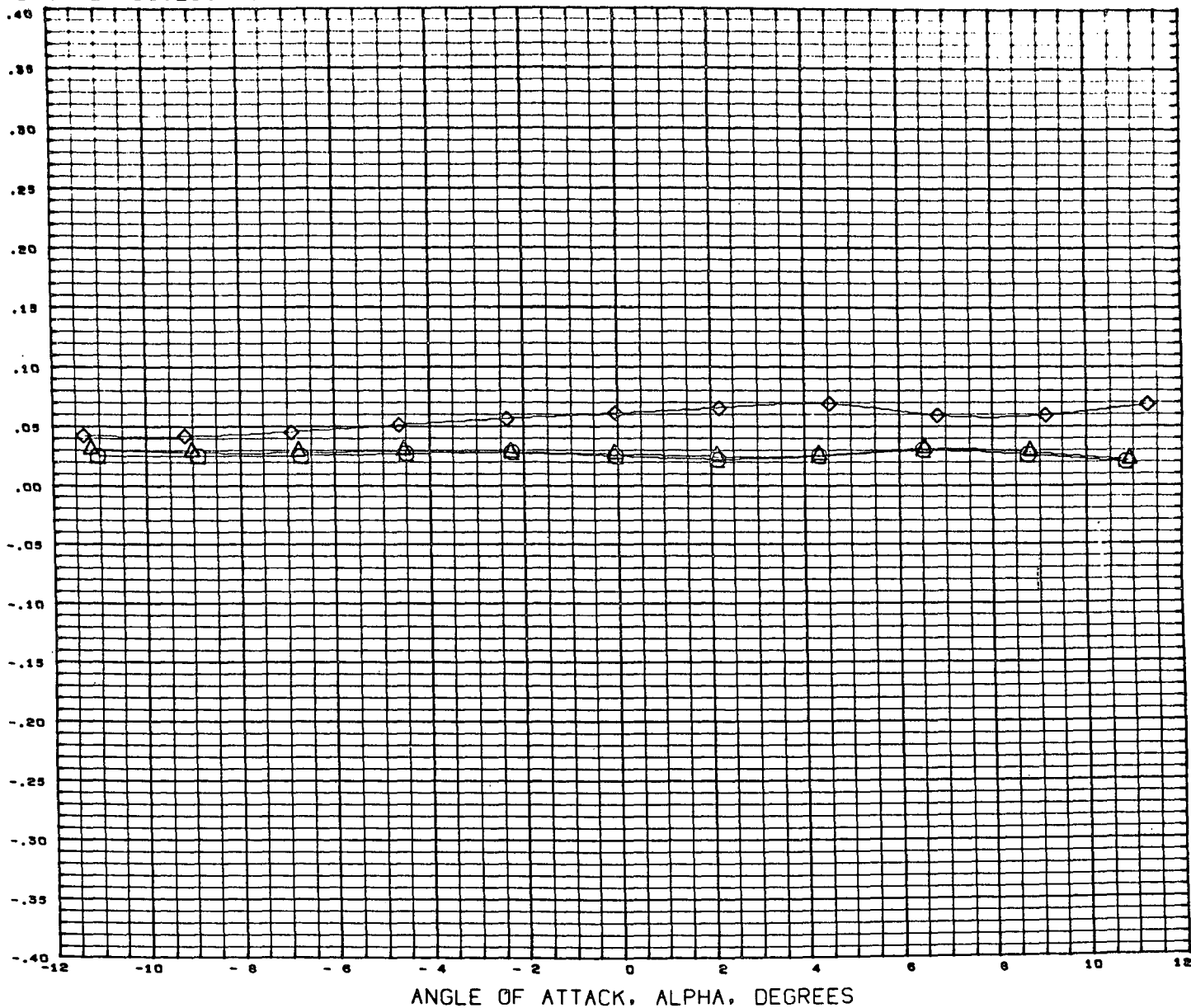
| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0033 | SCALE |

MACH 0.004

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



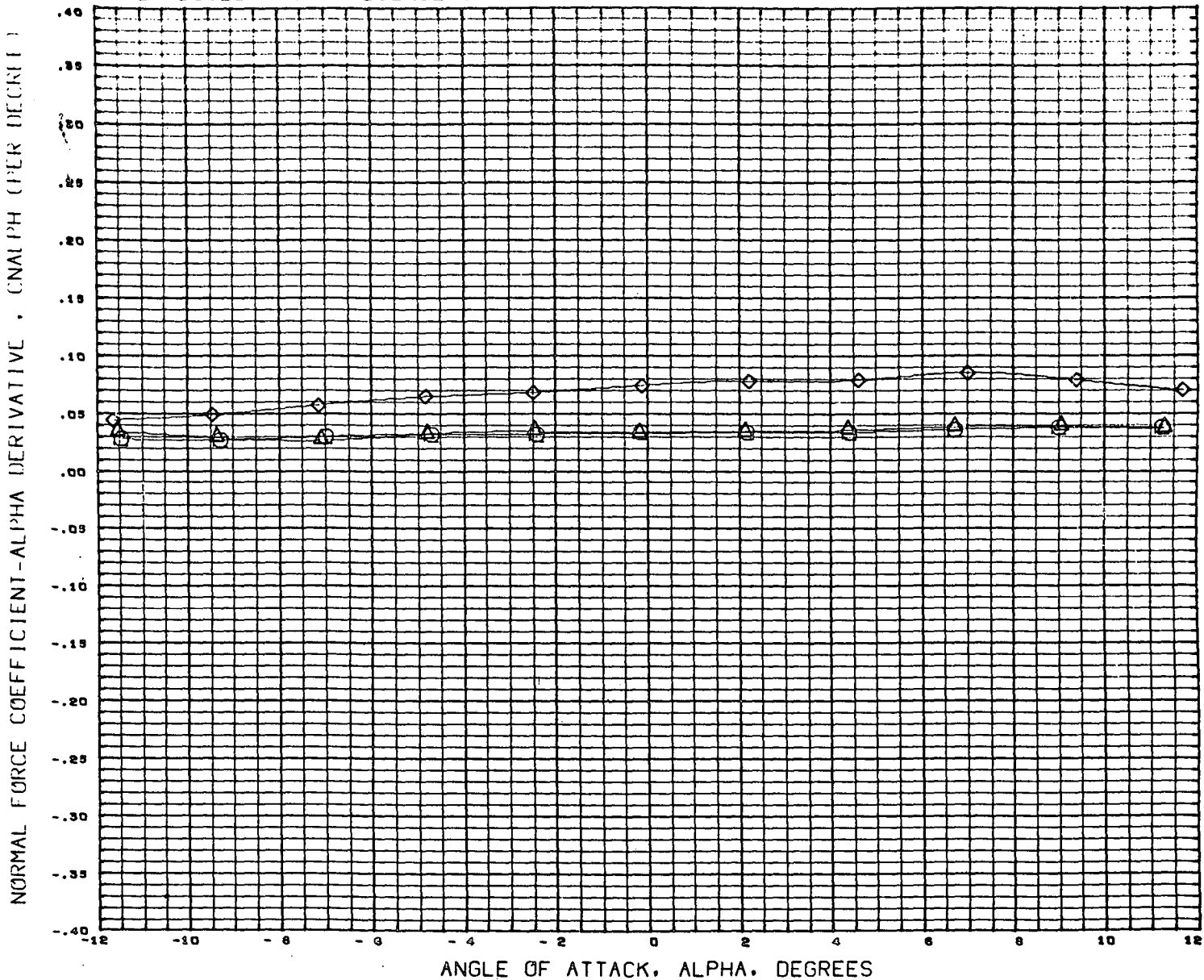
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (13222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.897

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER

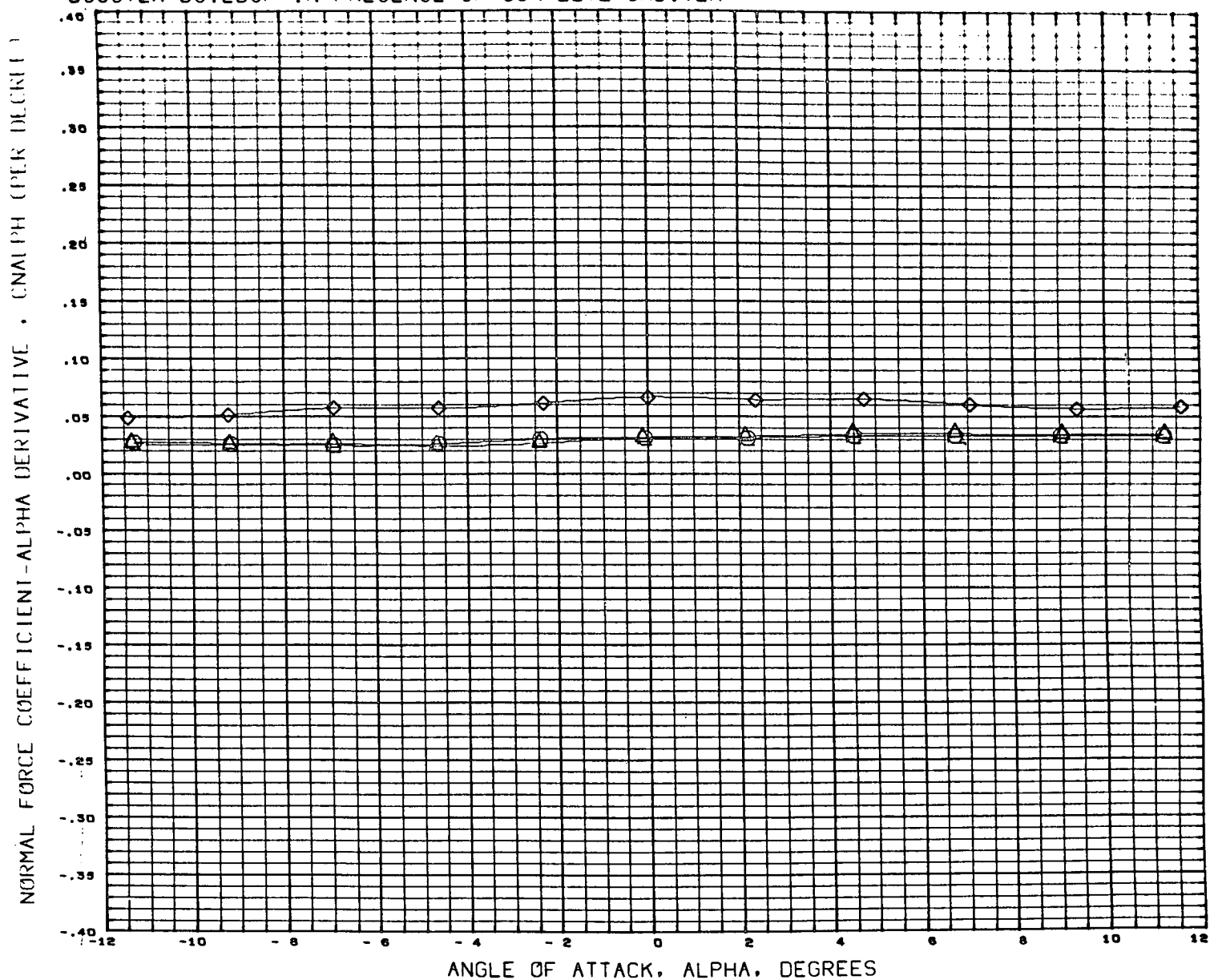


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVORB |
|-----------------|---|-------|--------|
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 0.000 | 0.000 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 | 0.000 | 0.000 |
| (03222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.102

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (13222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

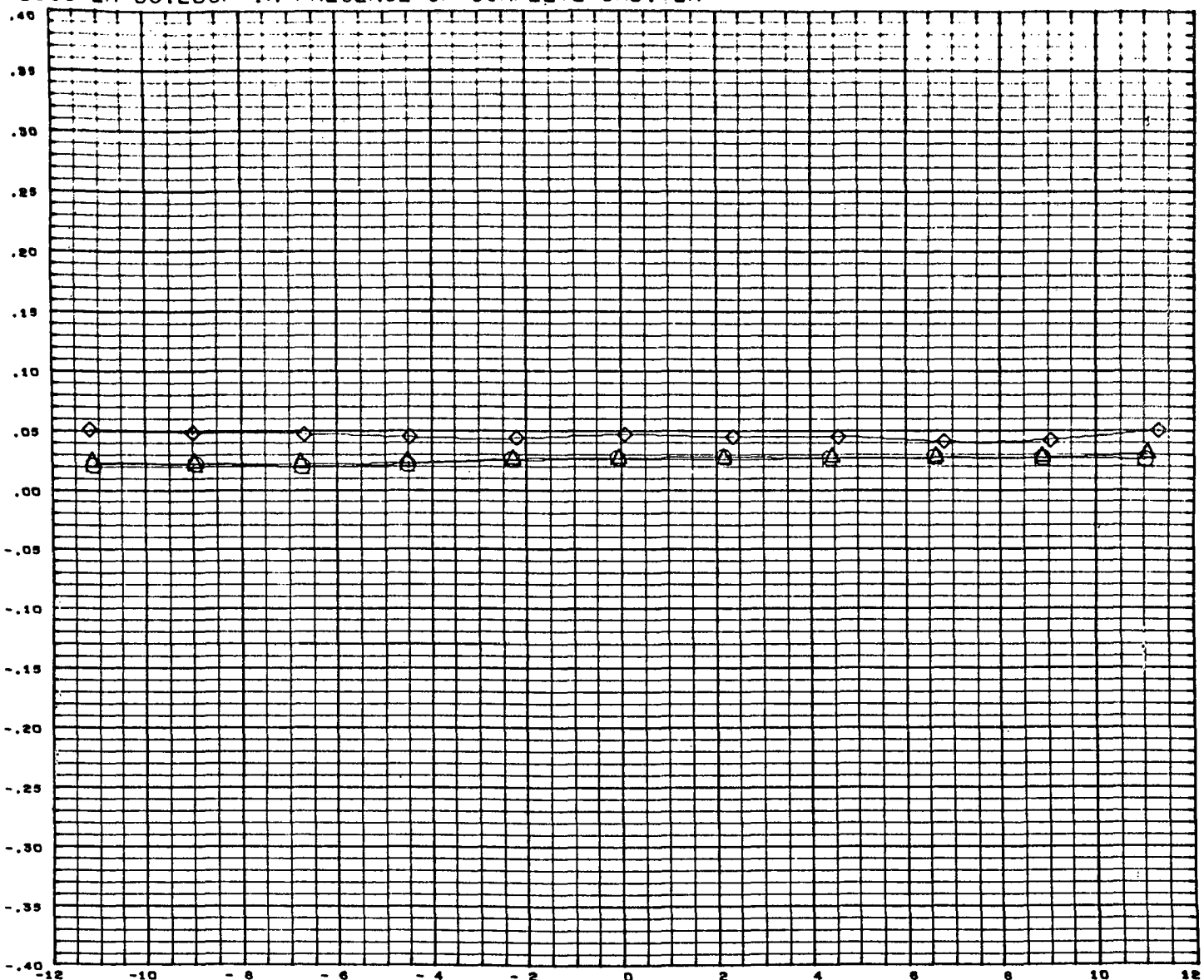
| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 19.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.468

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - (N/ALPH PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (03222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

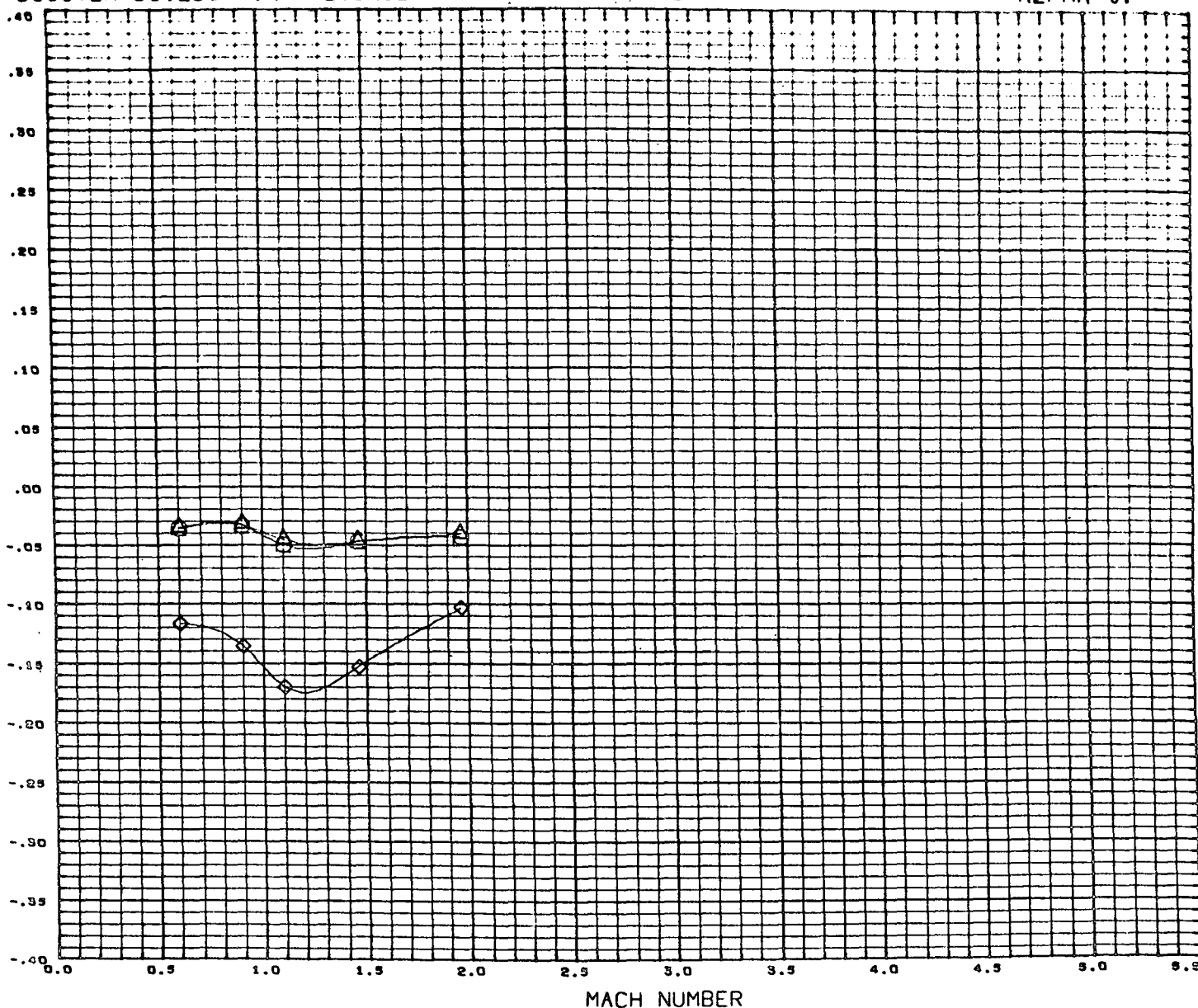
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|-----------------------|---------|--------|
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| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.956

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMALP (PER POINT)

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER

ALPHA=0.



MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (J3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (J3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (J3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.0360 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0039 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER

ALPHA=0.

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (J3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (J3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (13222A) | MSFC490 NR/GD LAUNCH B20C4B+14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0039 SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (K3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (K3215A) | MSFC490 NR/GD LAUNCH B20C4E+B5W17V17 |
| (23222A) | MSFC490 NR/GD LAUNCH B20C4EW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (K3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (K3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (23222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



MACH NUMBER

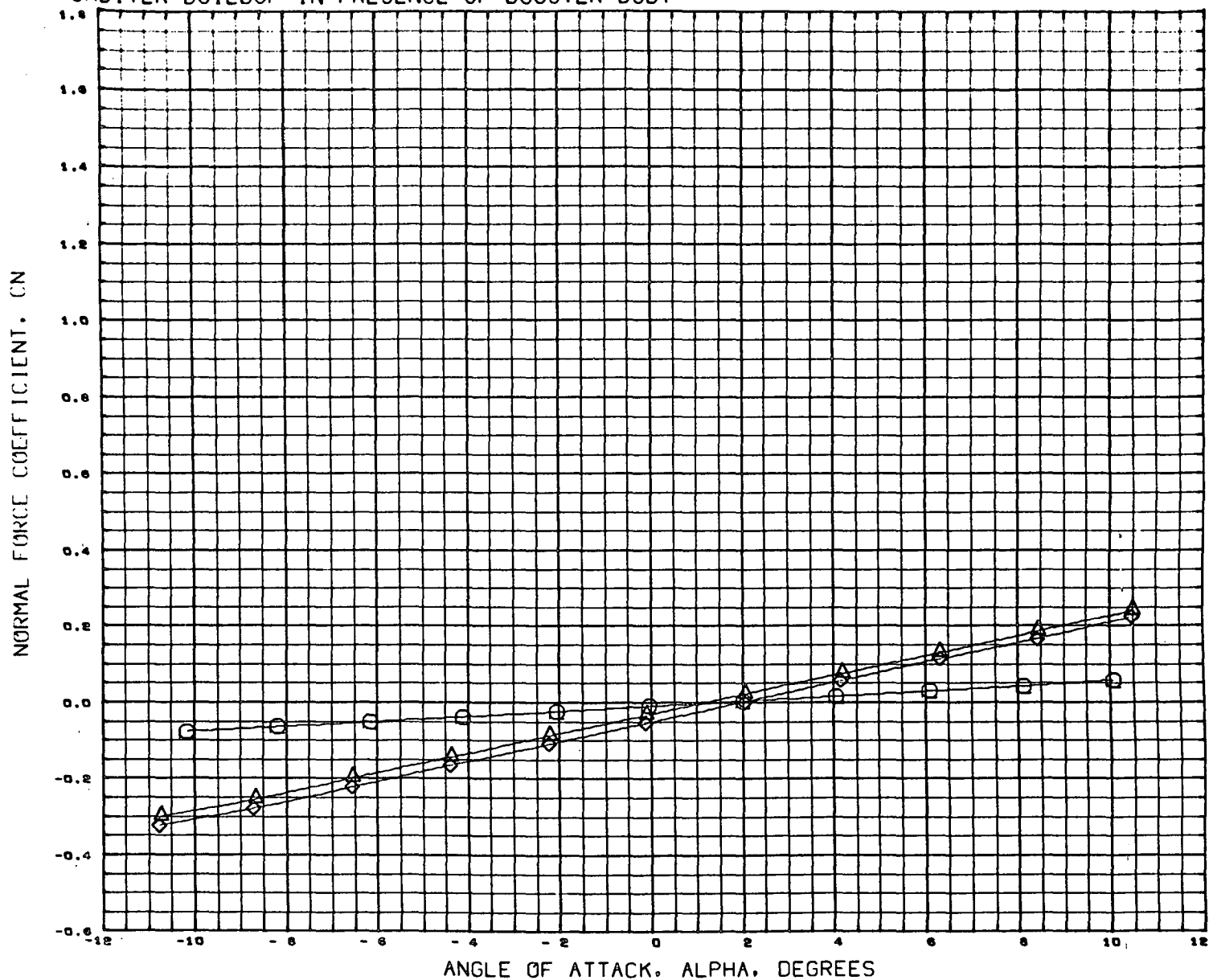
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
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| (K3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |
| (23222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB |
|-------|--------|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.8960 | SQ IN |
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| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



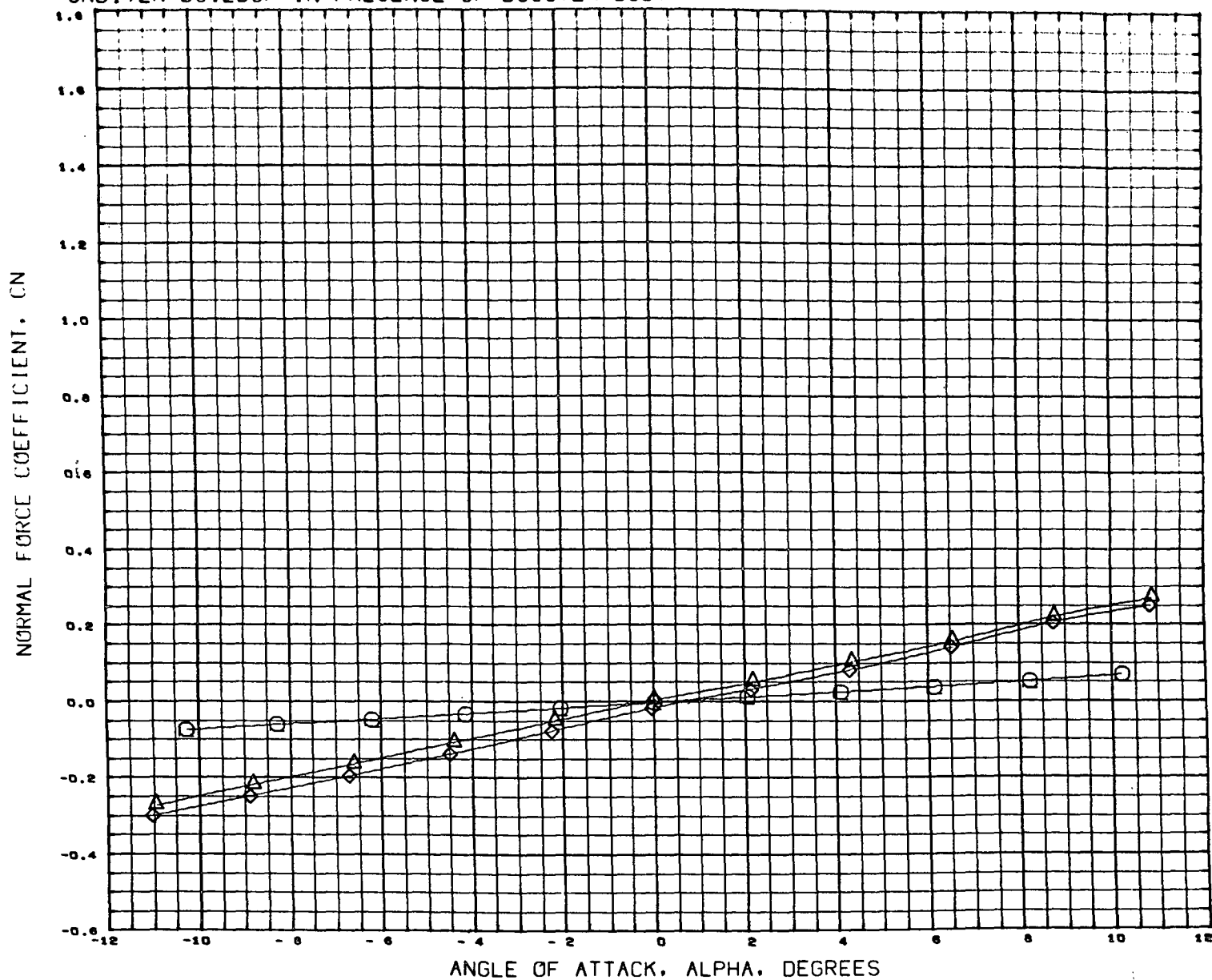
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|----------|--------|-----------------------------------|
| (H3208A) | ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3213A) | △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0930 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.599

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



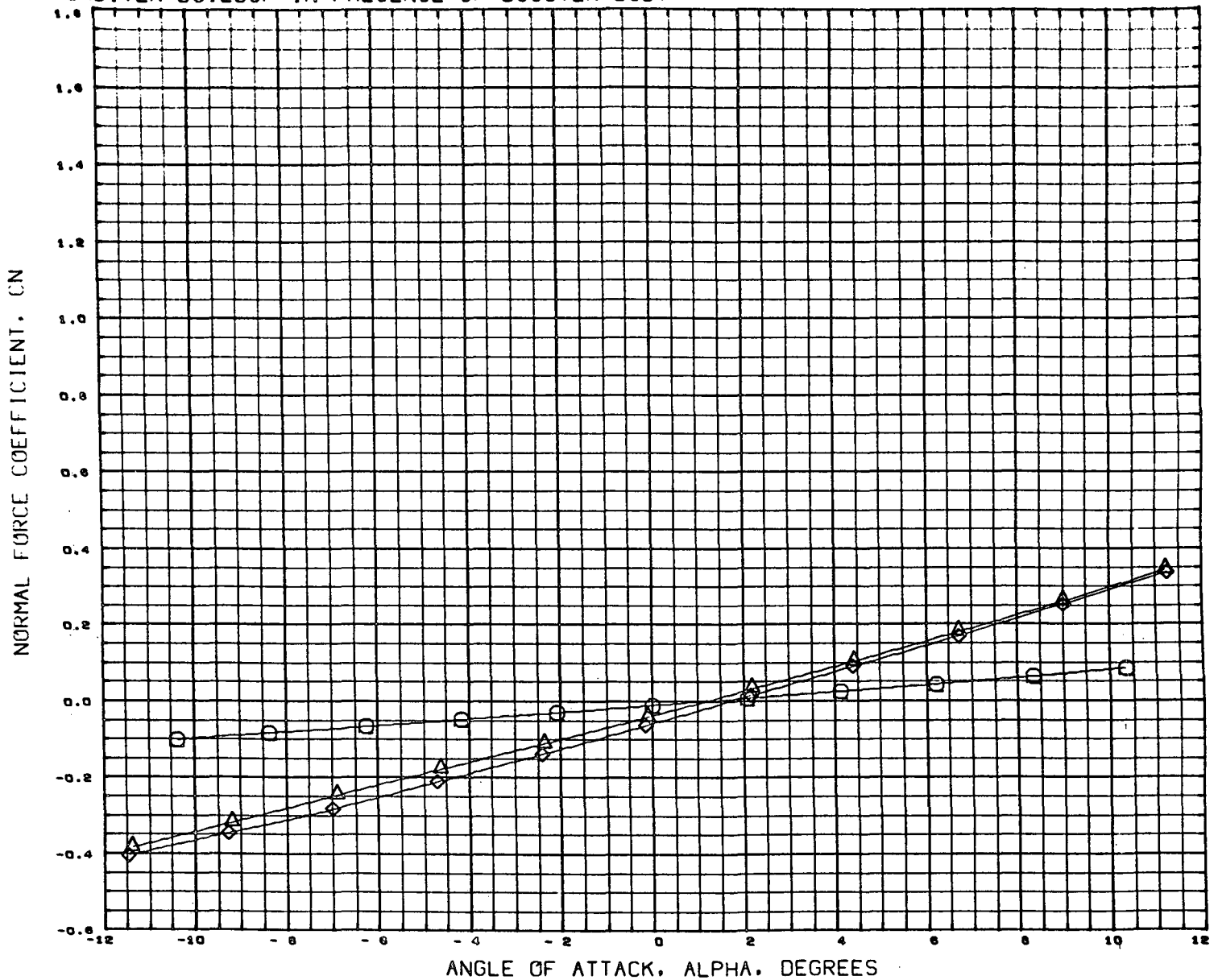
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.897

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



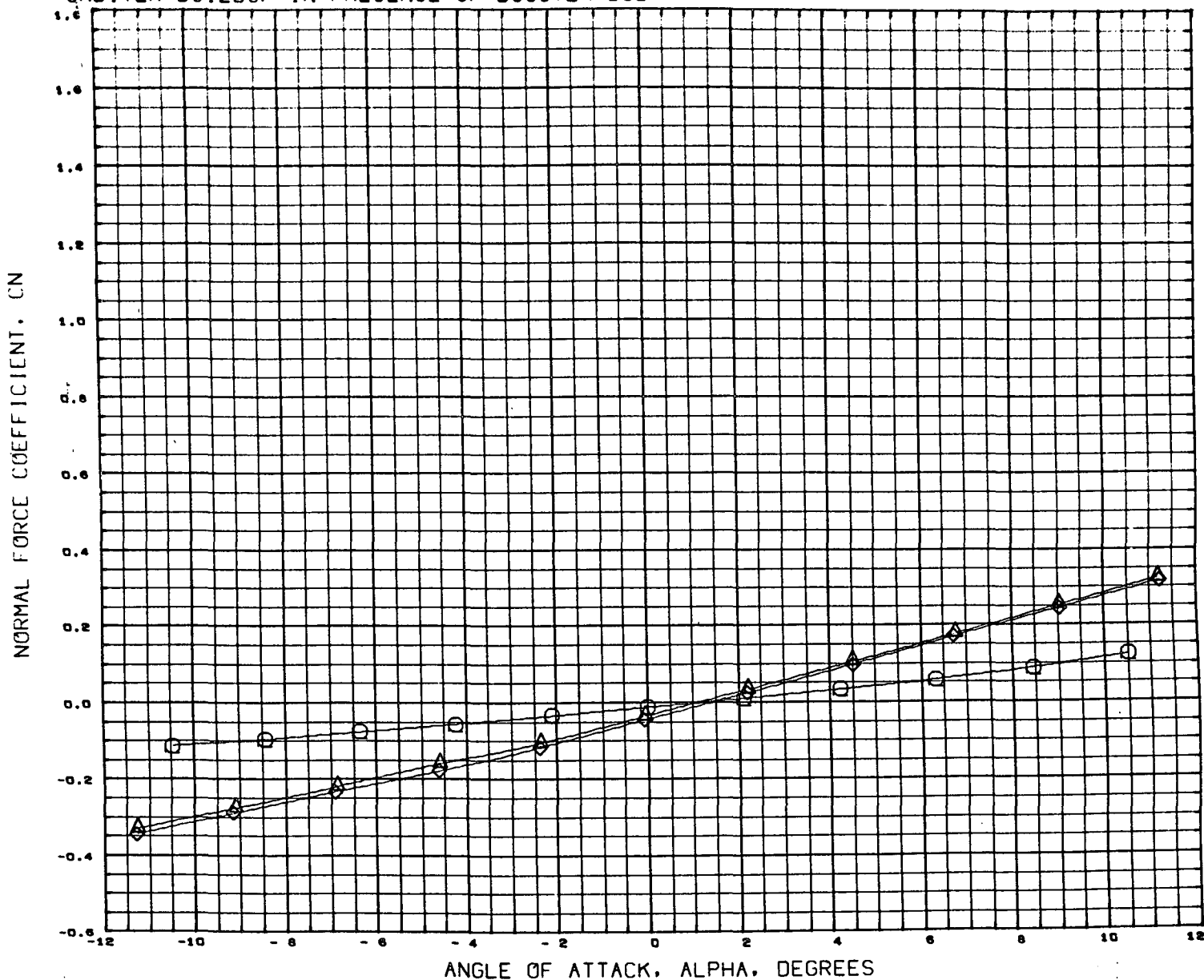
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|-----------------|-----------------------------------|
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| (H3213A) △ | MSFC490 NR/GD LAUNCH B20+85W17 |
| (H3214A) ◇ | MSFC490 NR/GD LAUNCH B20+85W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



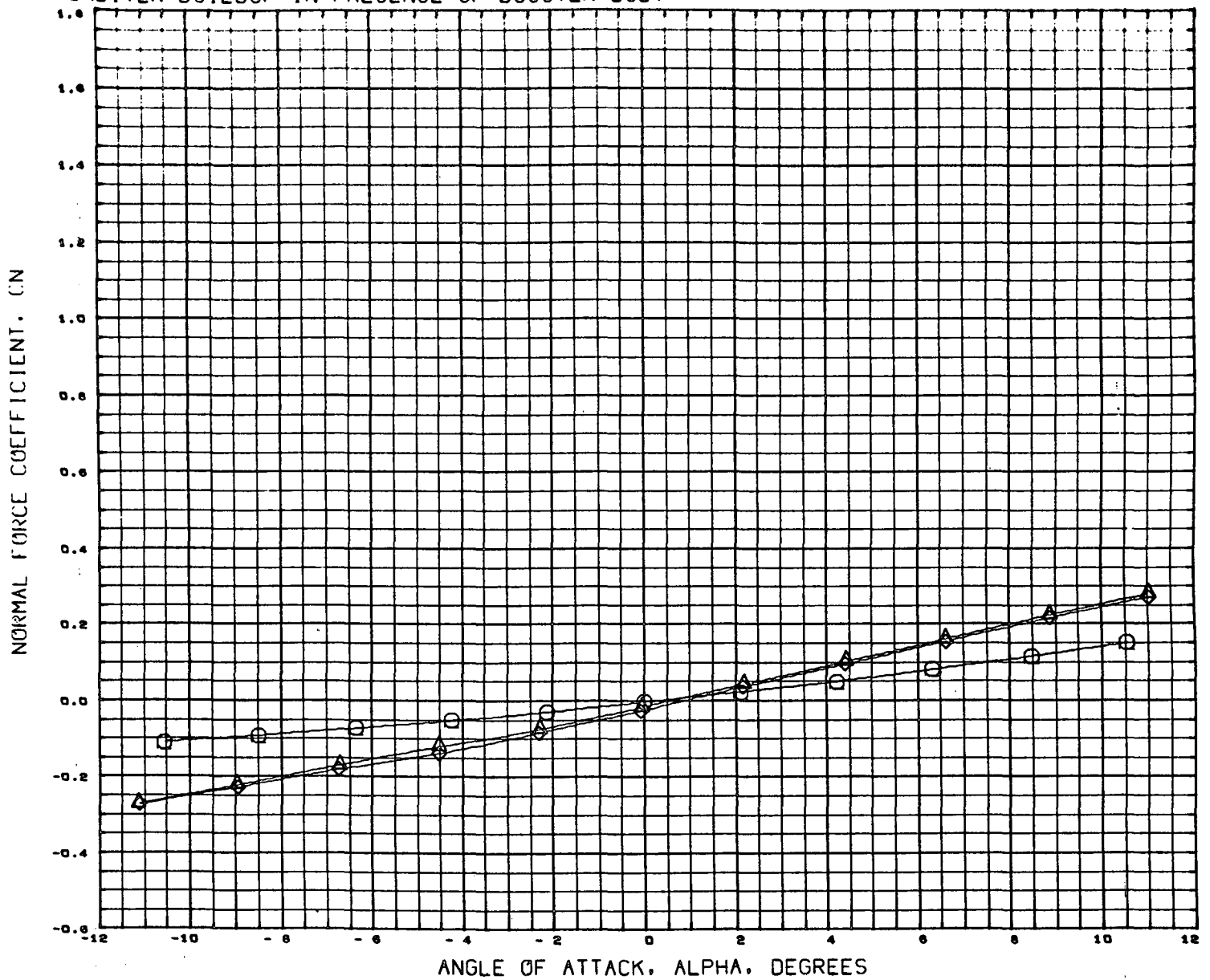
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.489

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

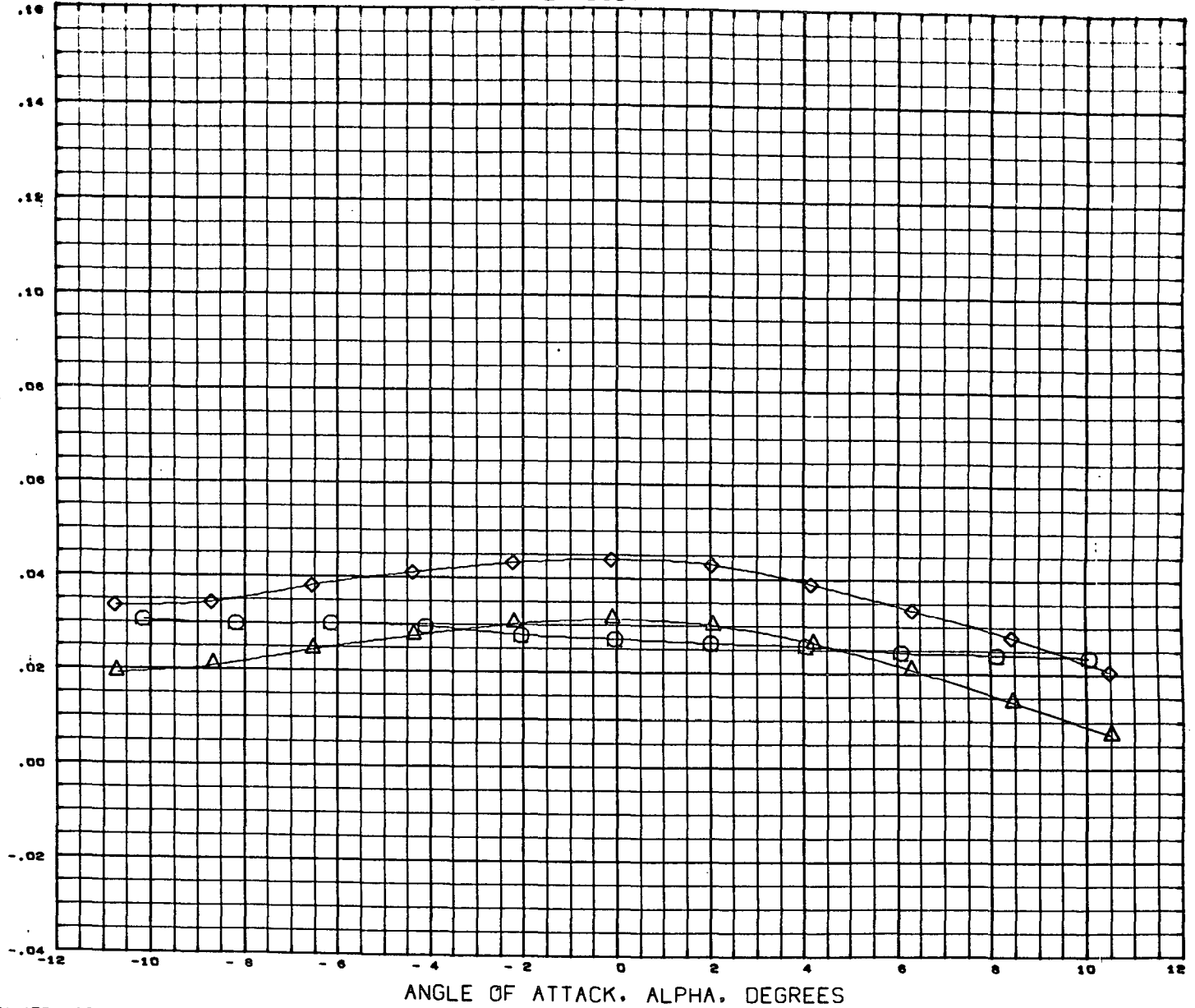
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.958

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



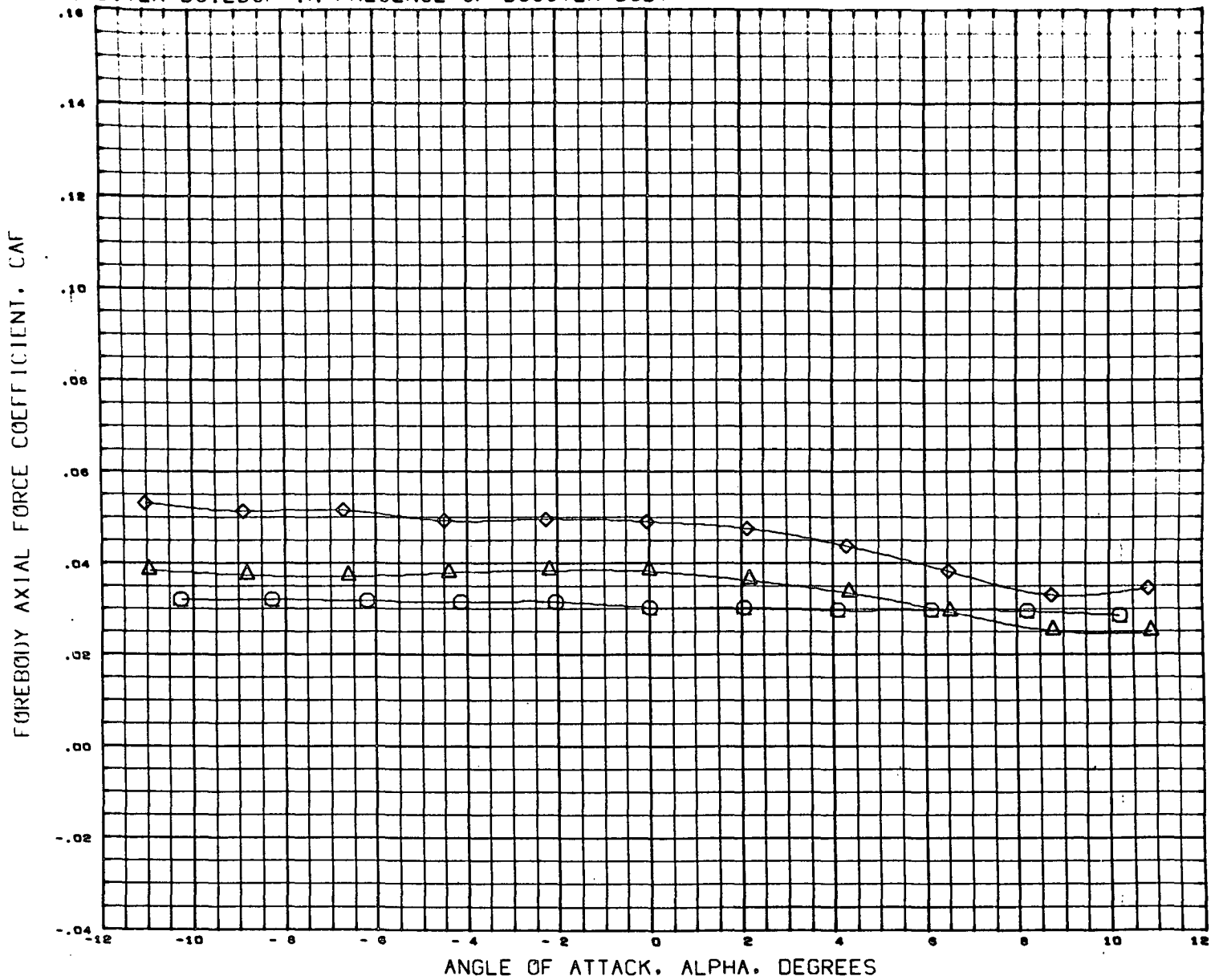
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3208A) ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3213A) △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.599

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



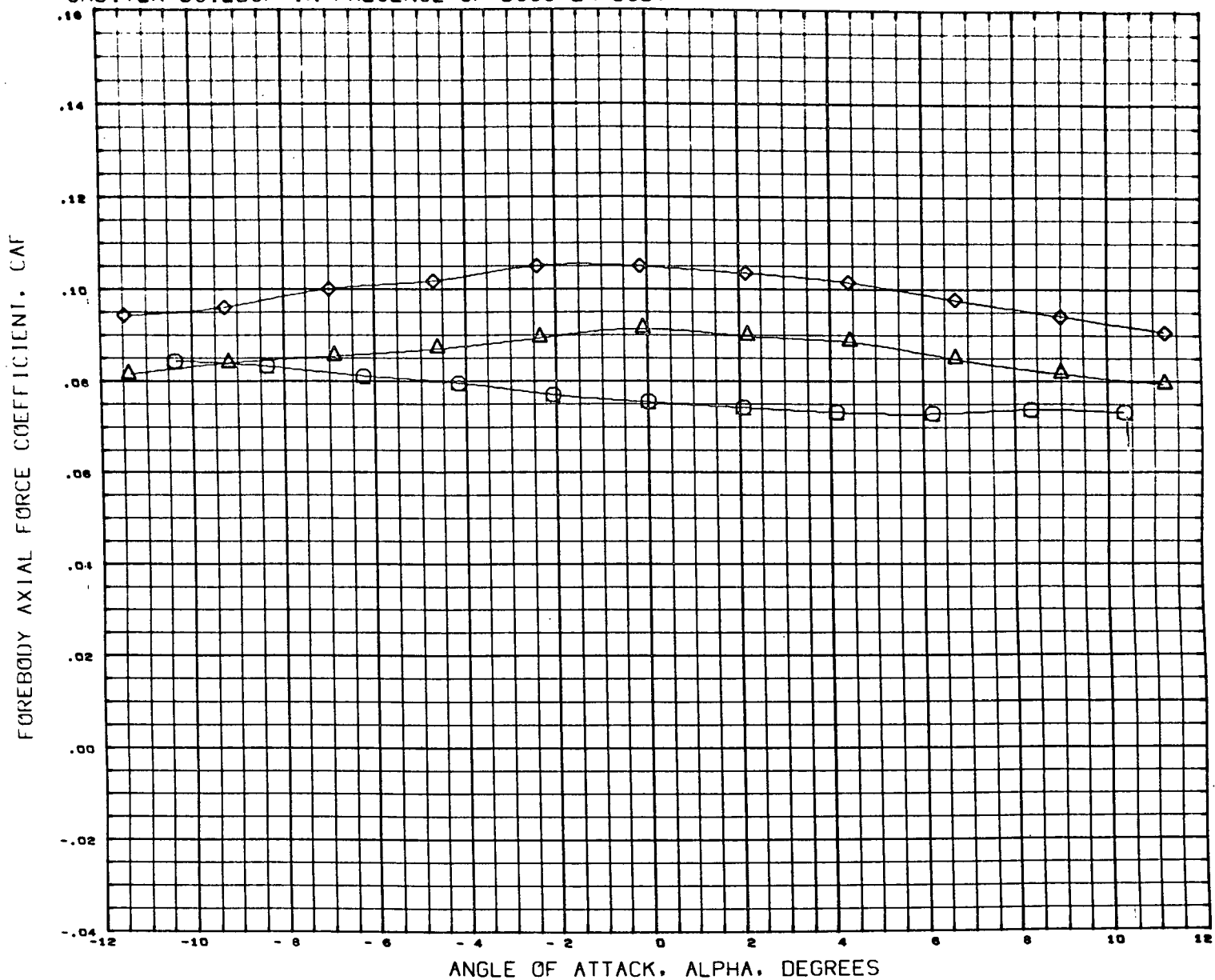
| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|----------|--------|-----------------------------------|
| (H3208A) | ○ | MSFC490 NR/GD LAUNCH B20+B3 |
| (H3213A) | △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.897

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3208A) ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3213A) △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

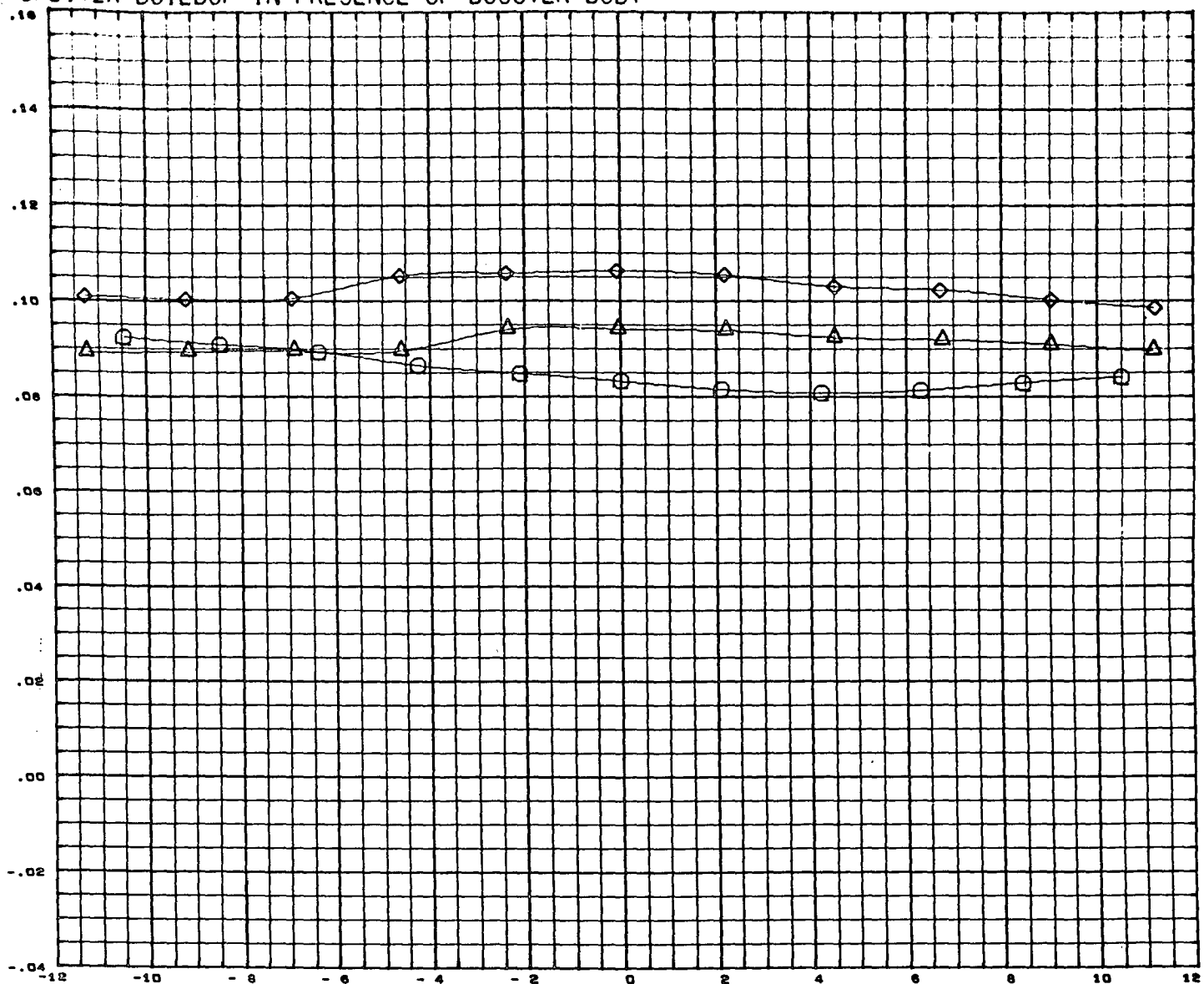
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



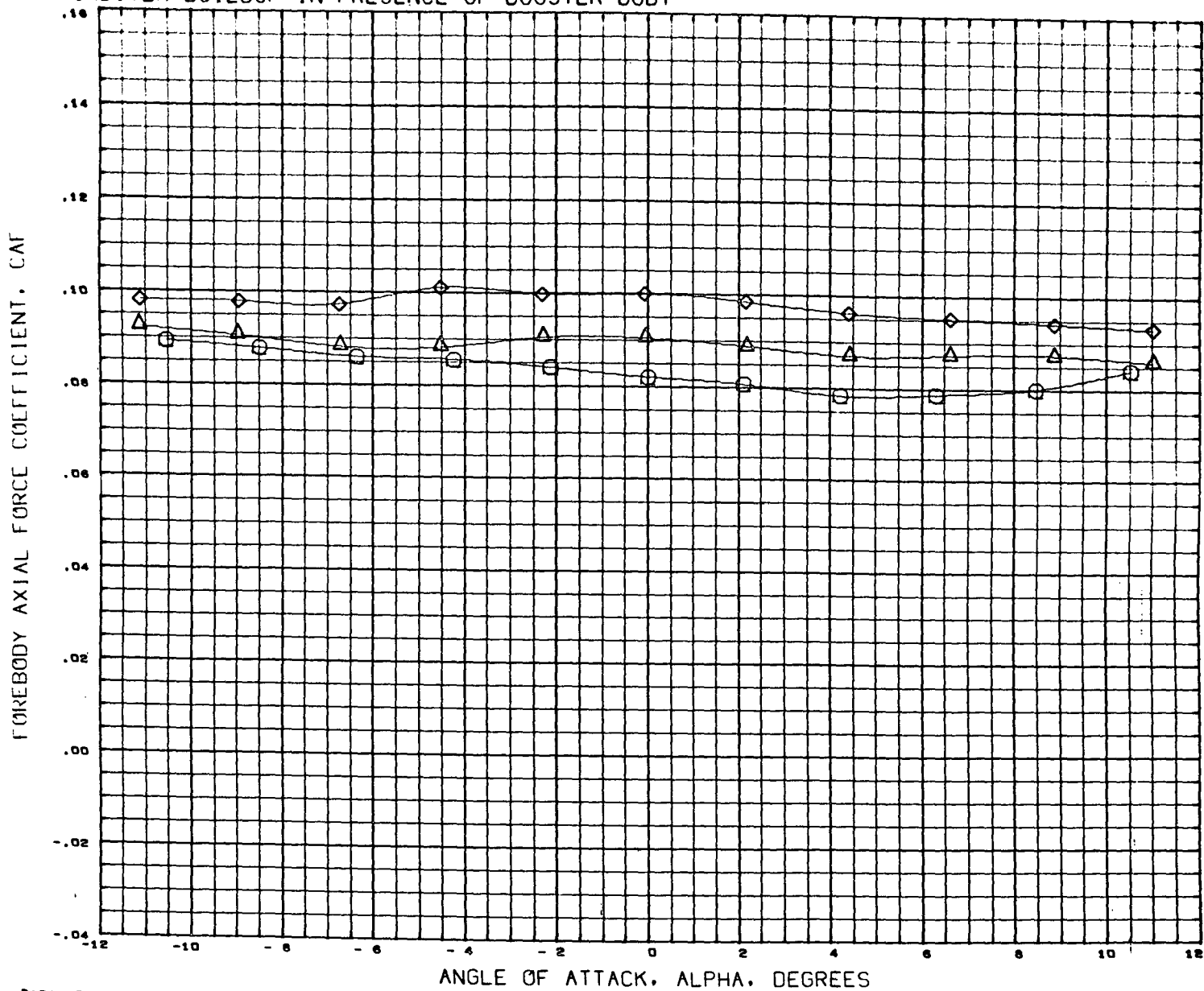
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|-----------------|-----------------------------------|
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
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| SCALE | 0.0035 SCALE |

MACH 1.469

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



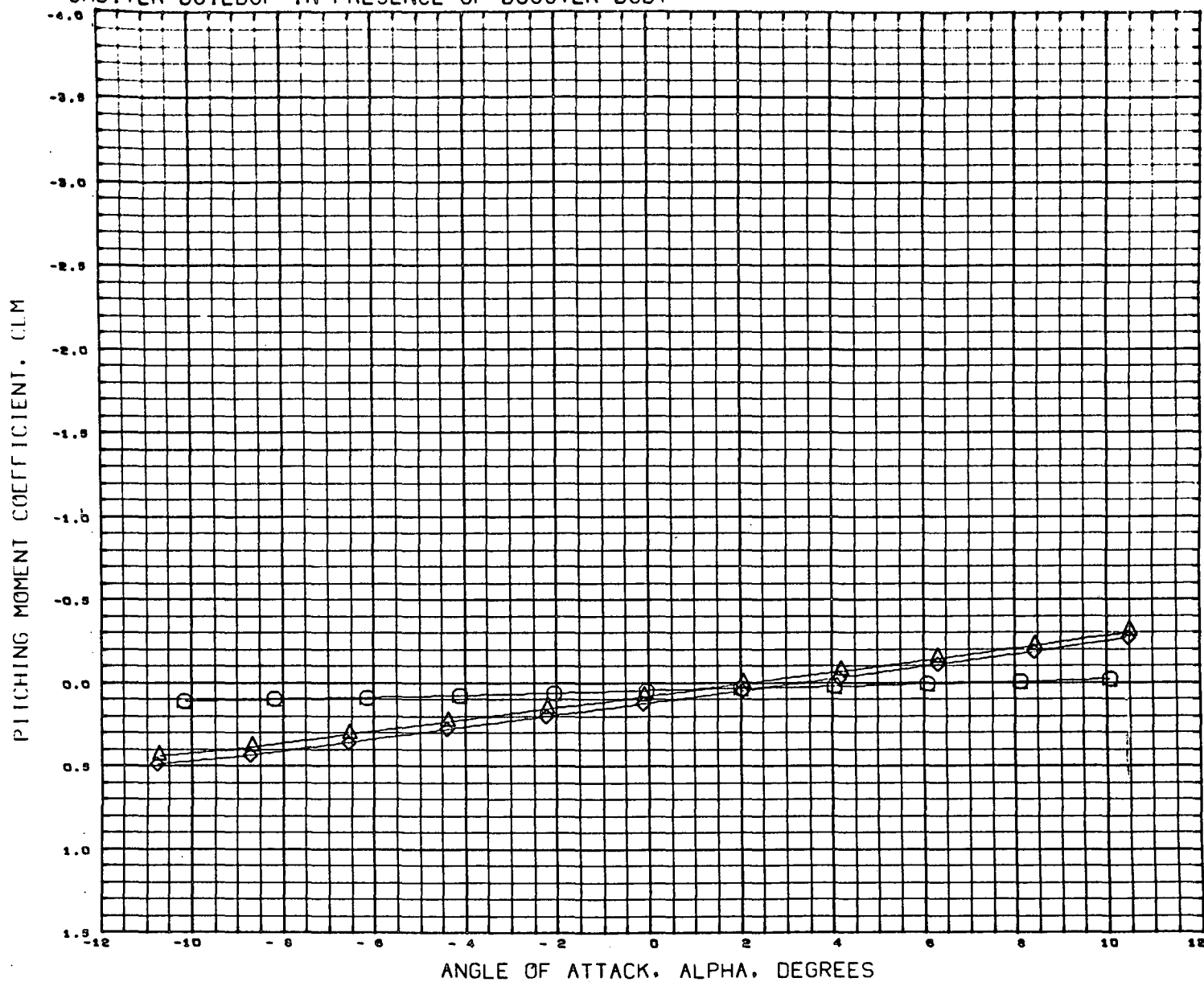
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.958

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



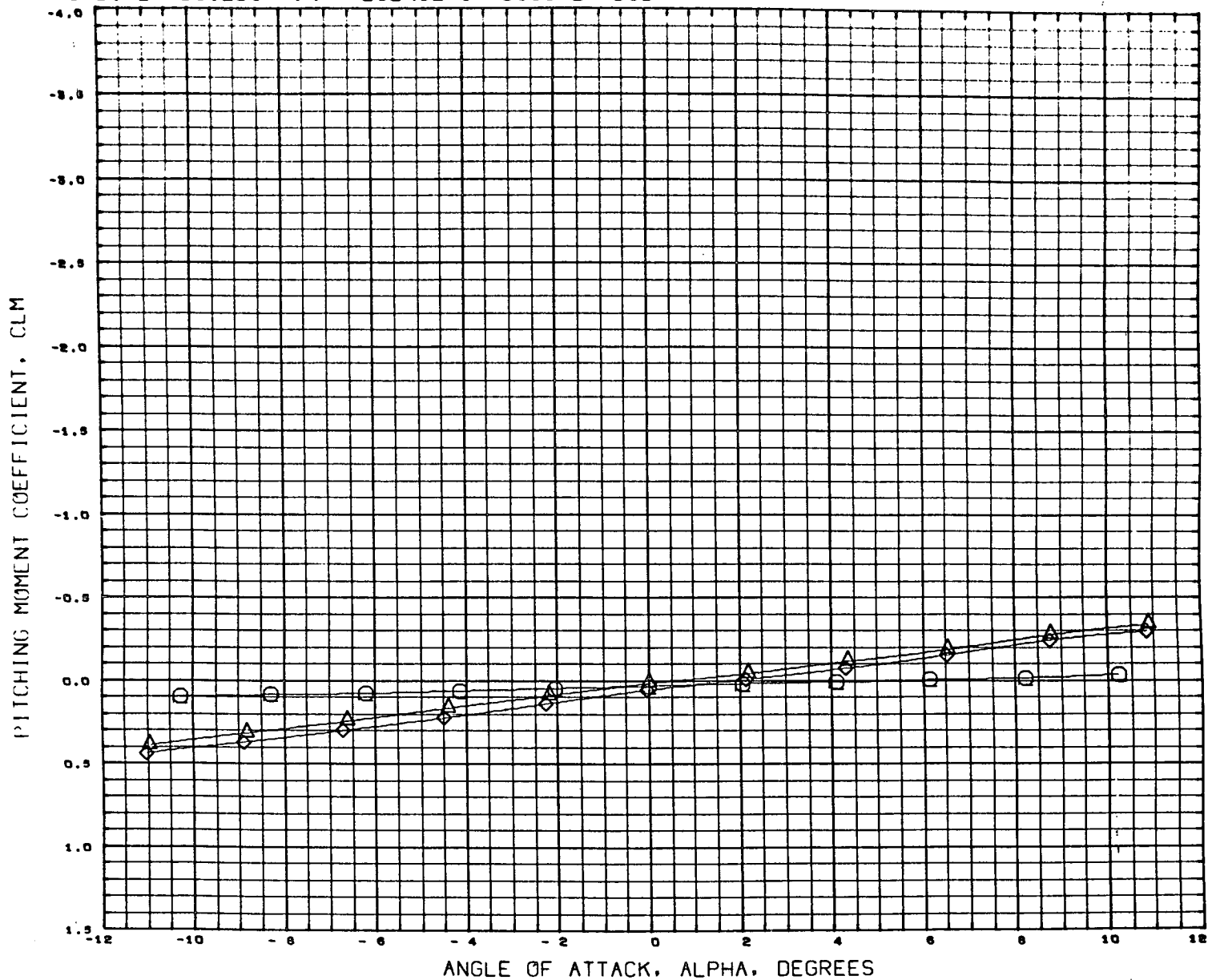
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|-----------------|-----------------------------------|
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
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| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.599

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



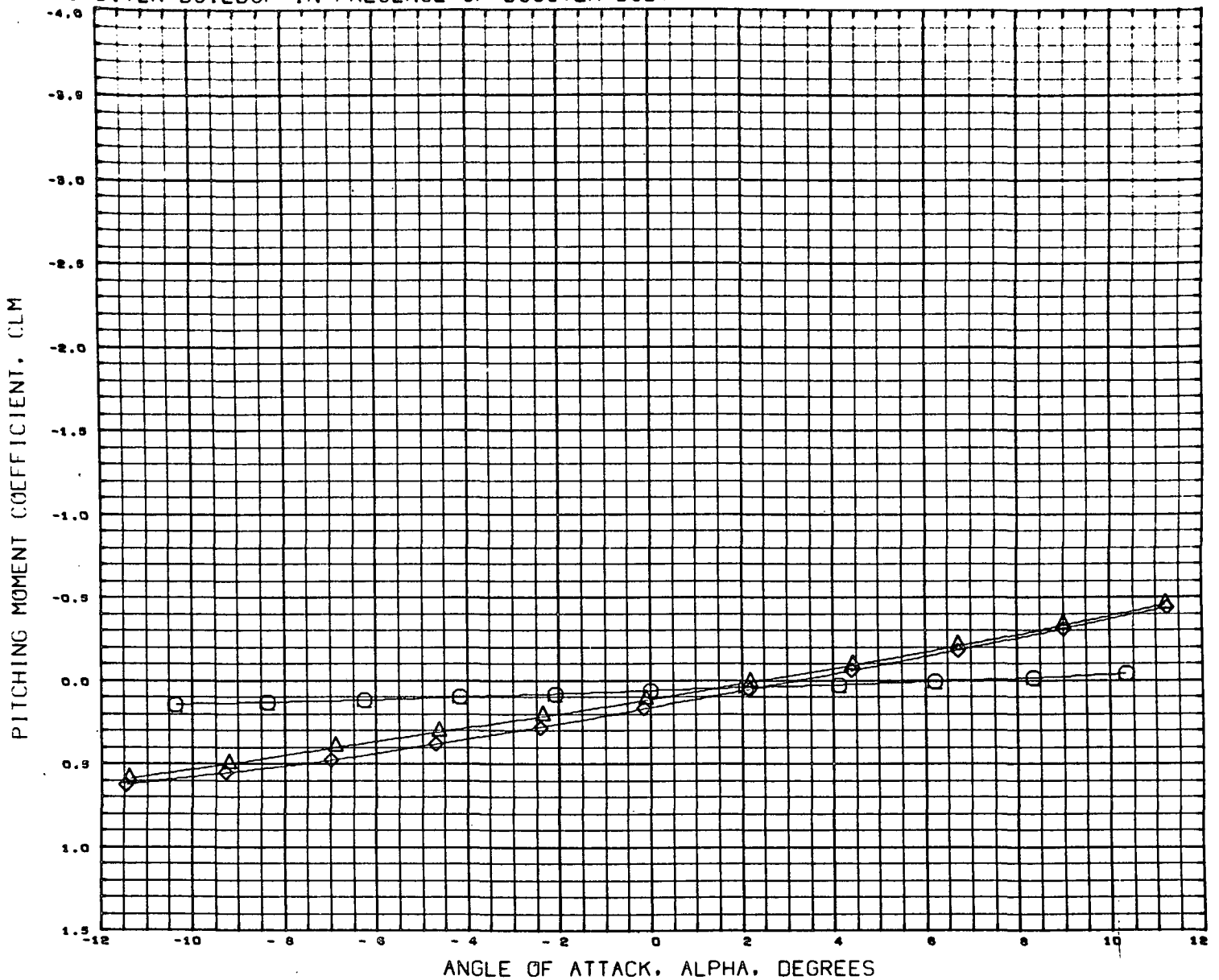
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.897

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



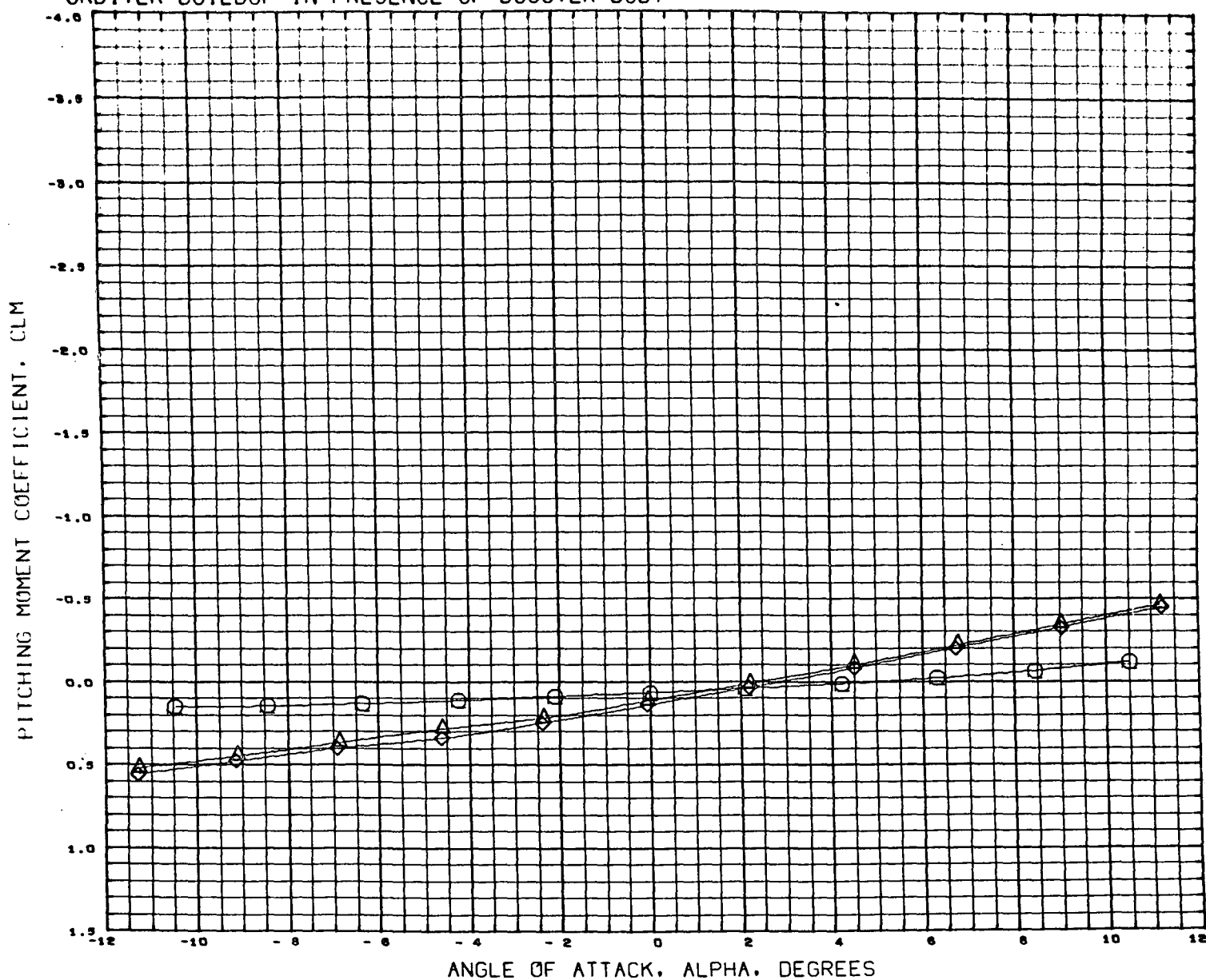
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|-----------------|-----------------------------------|
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



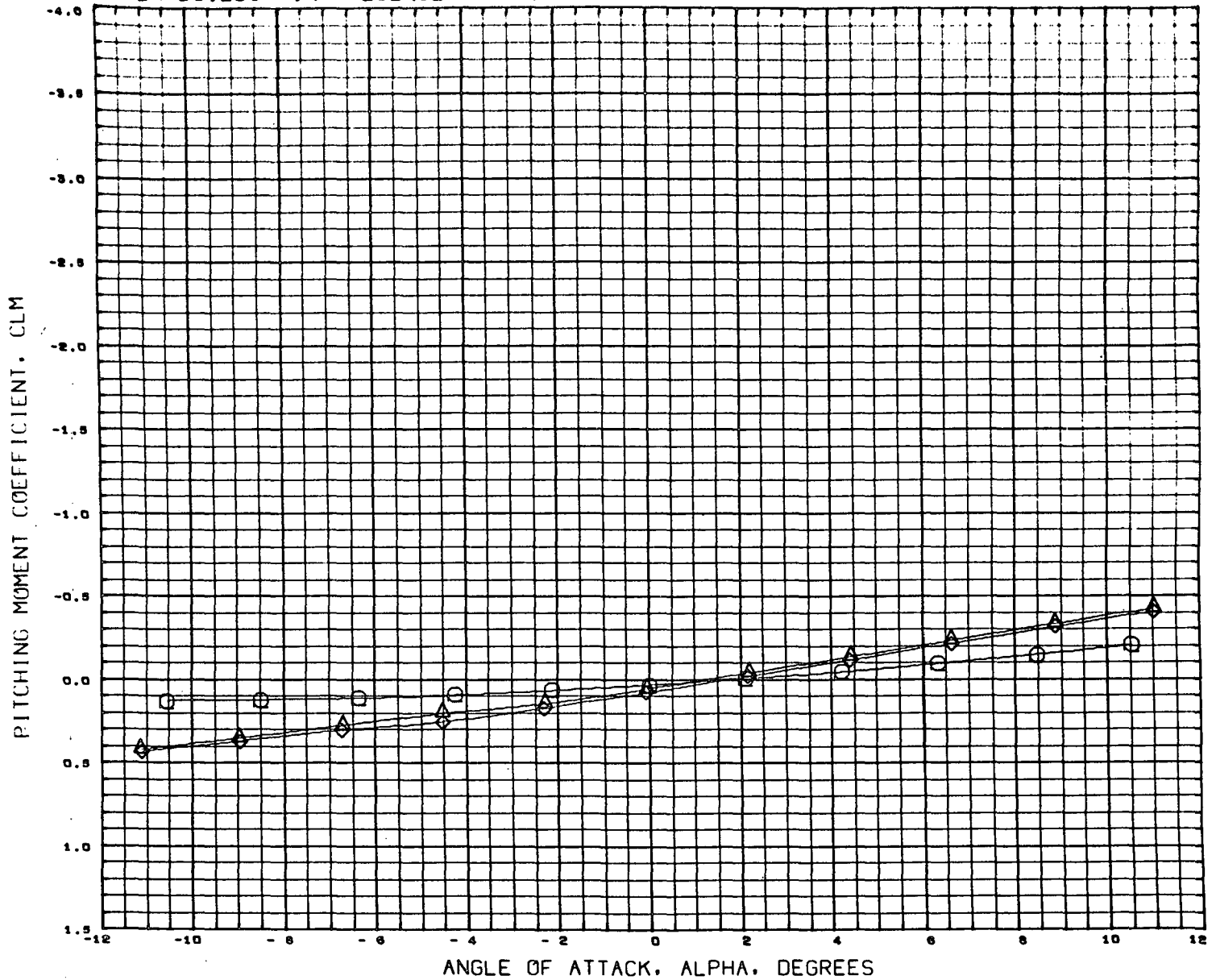
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|-----------------|-----------------------------------|
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.469

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



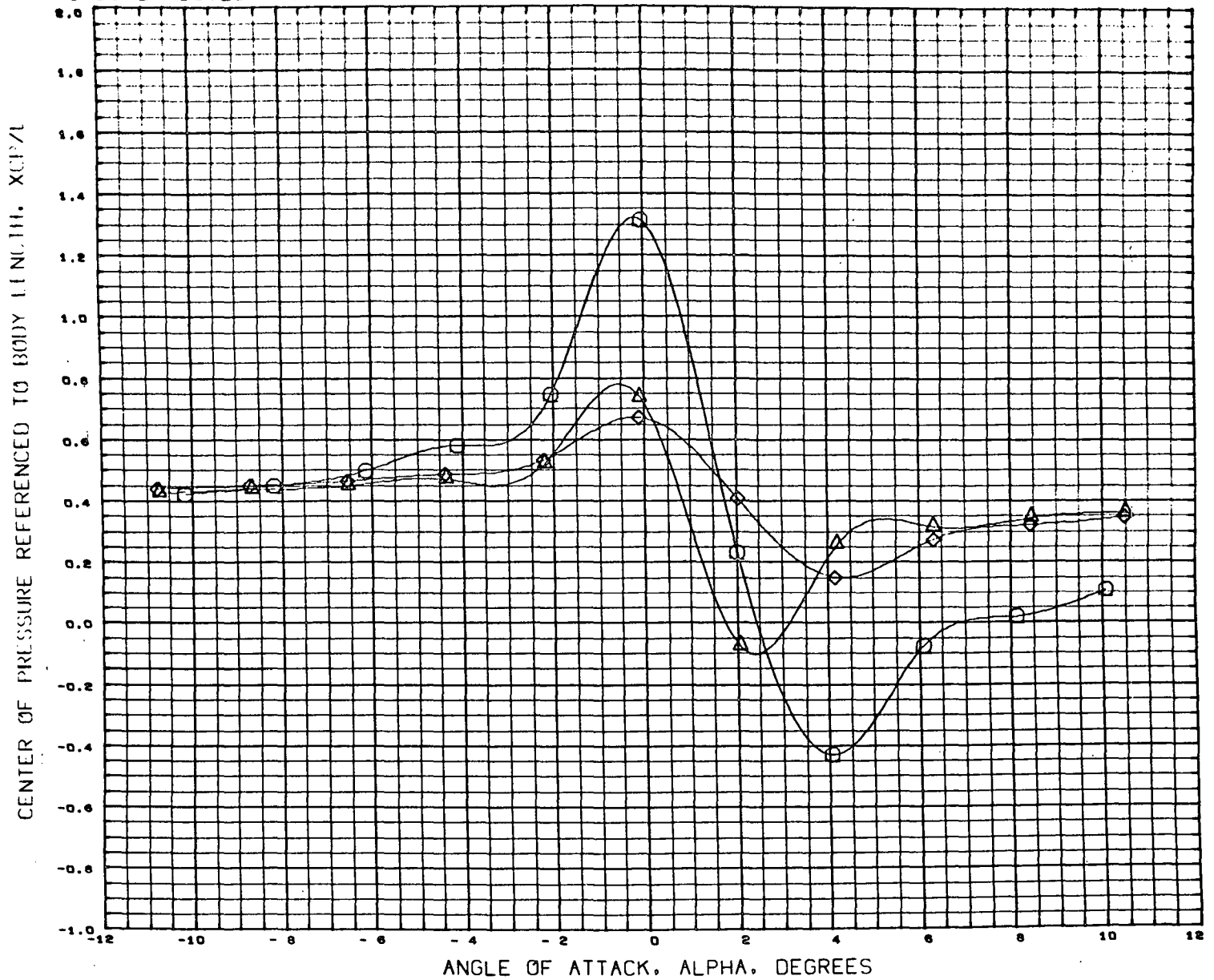
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|-----------------|-----------------------------------|
| (H3206A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.958

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



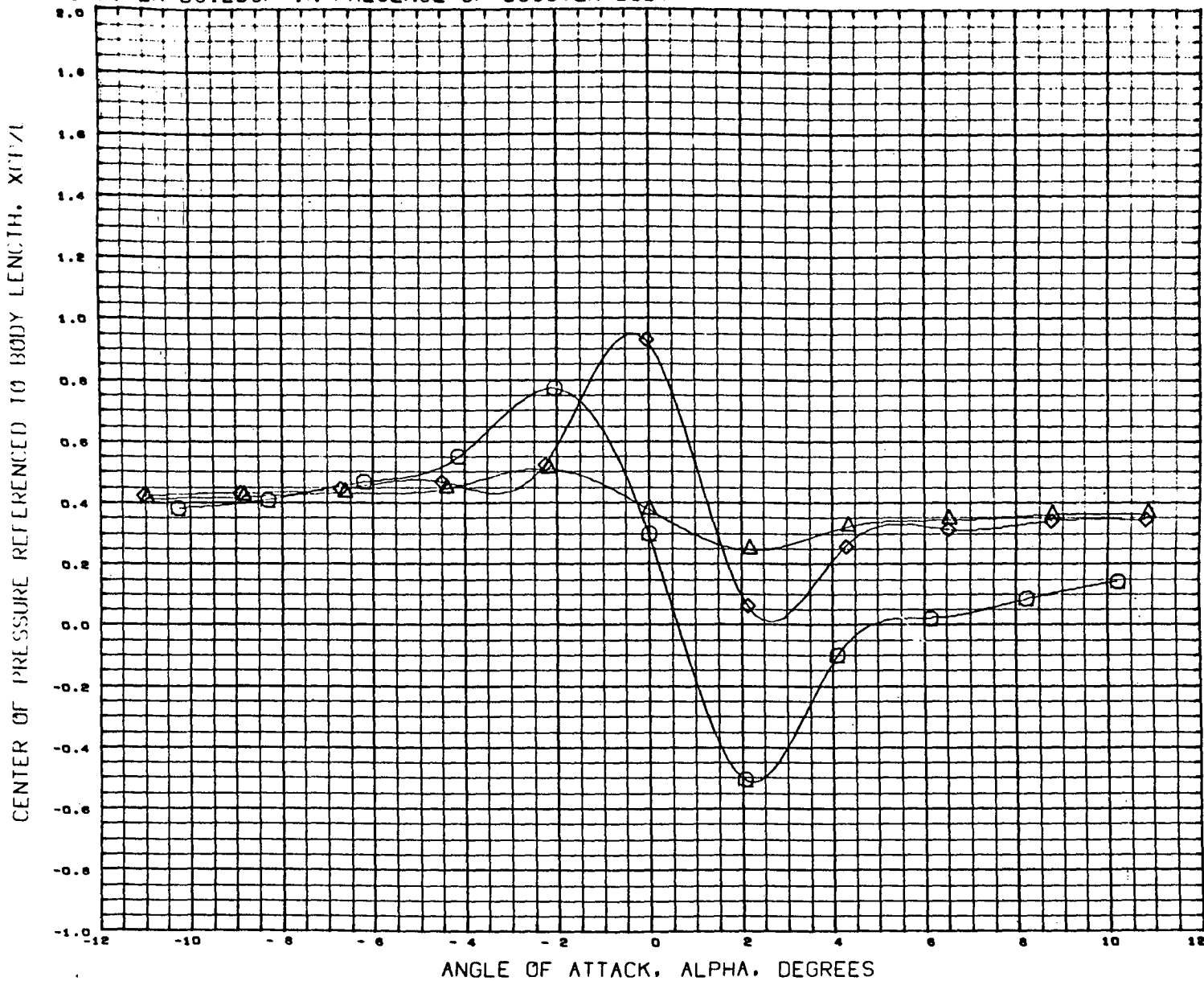
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|----------|--------|-----------------------------------|
| (H3208A) | ○ | MSFC490 NR/GD LAUNCH B20+B3 |
| (H3213A) | △ | MSFC490 NR/GD LAUNCH B20+B3W17 |
| (H3214A) | ◇ | MSFC490 NR/GD LAUNCH B20+B3W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.599

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



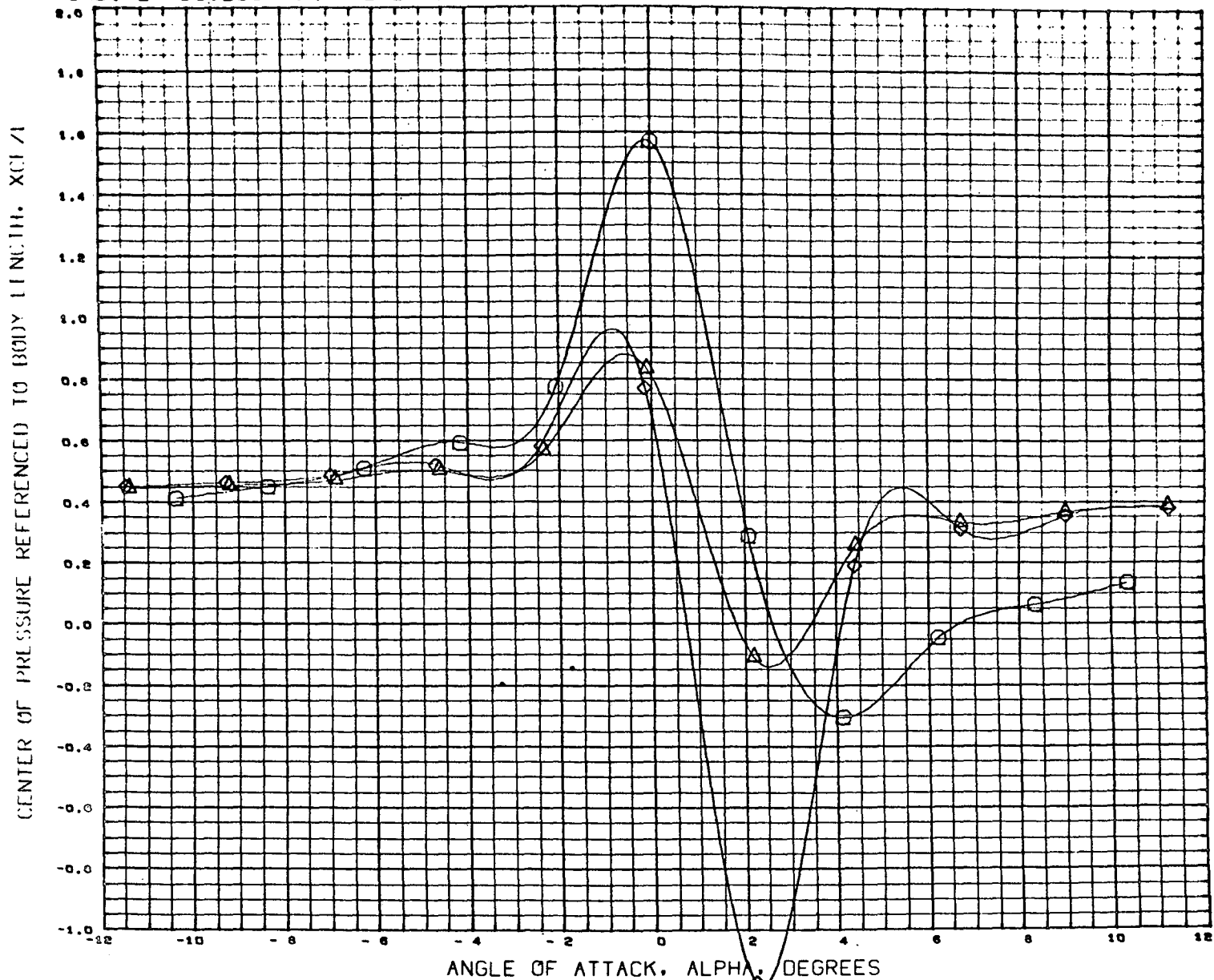
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 19.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.697

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



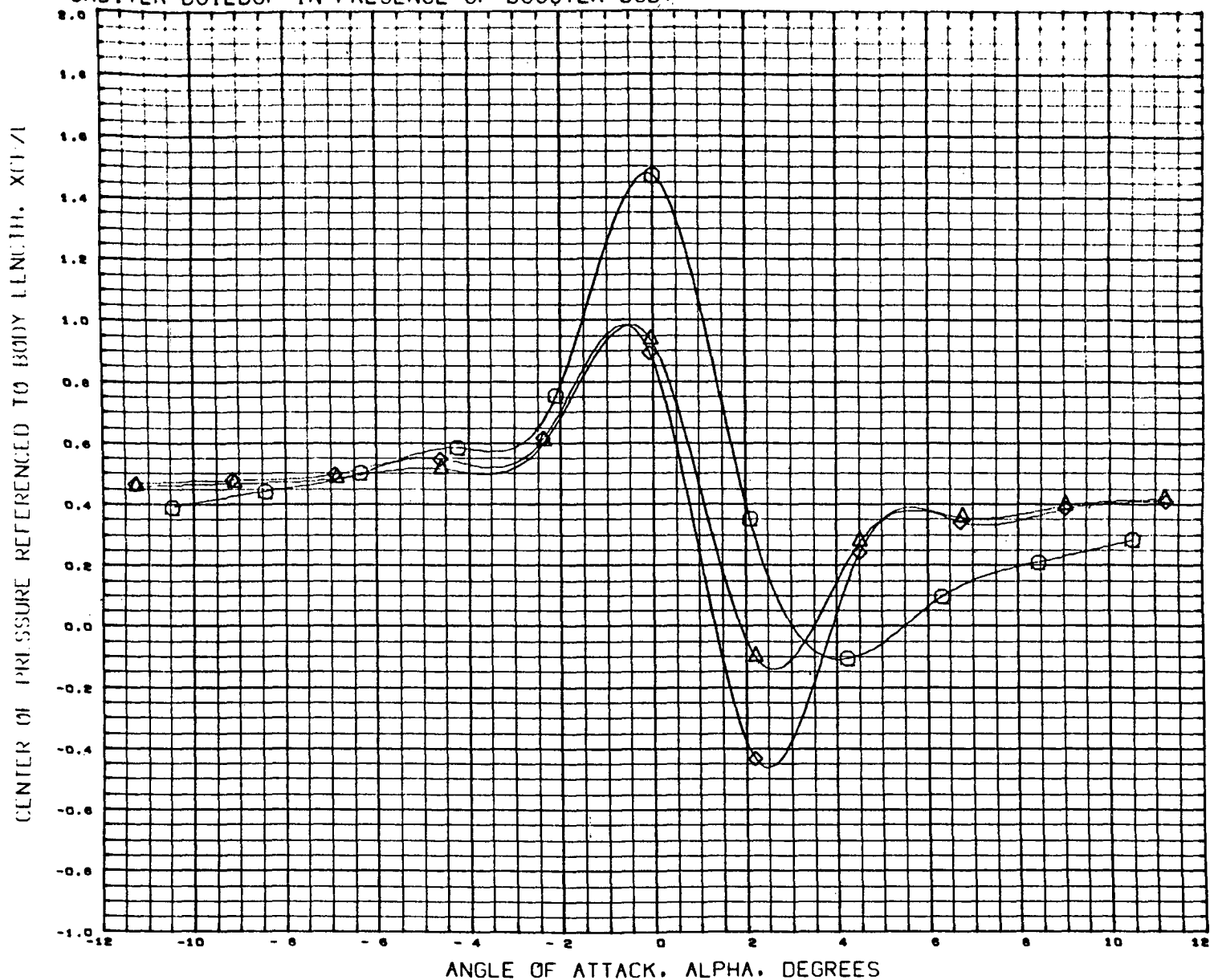
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3213A) MSFC490 NR/GD LAUNCH 820+83W17
 (H3214A) MSFC490 NR/GD LAUNCH 820+83W17V17

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.096

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

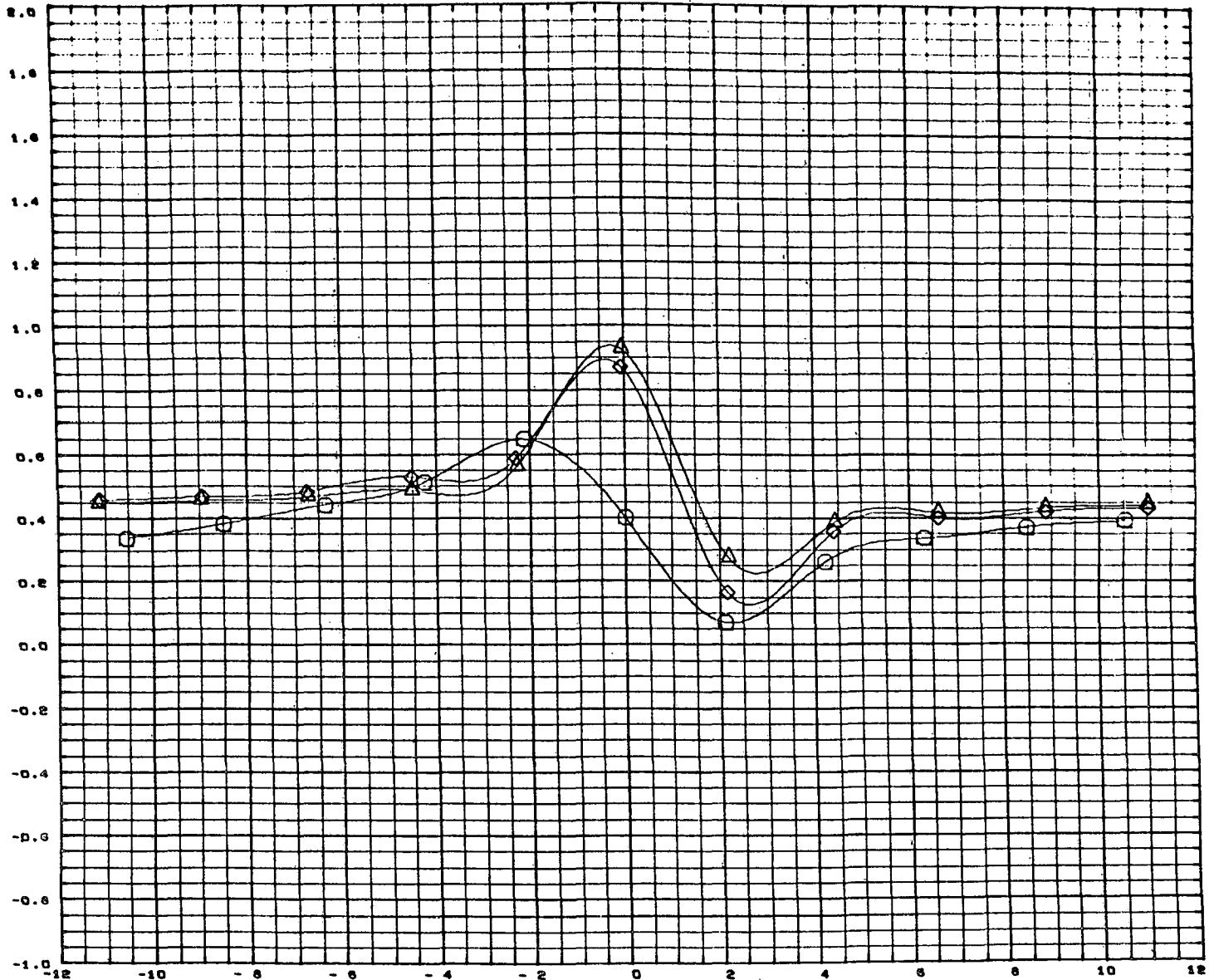
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6360 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.469

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



ANGLE OF ATTACK, ALPHA, DEGREES

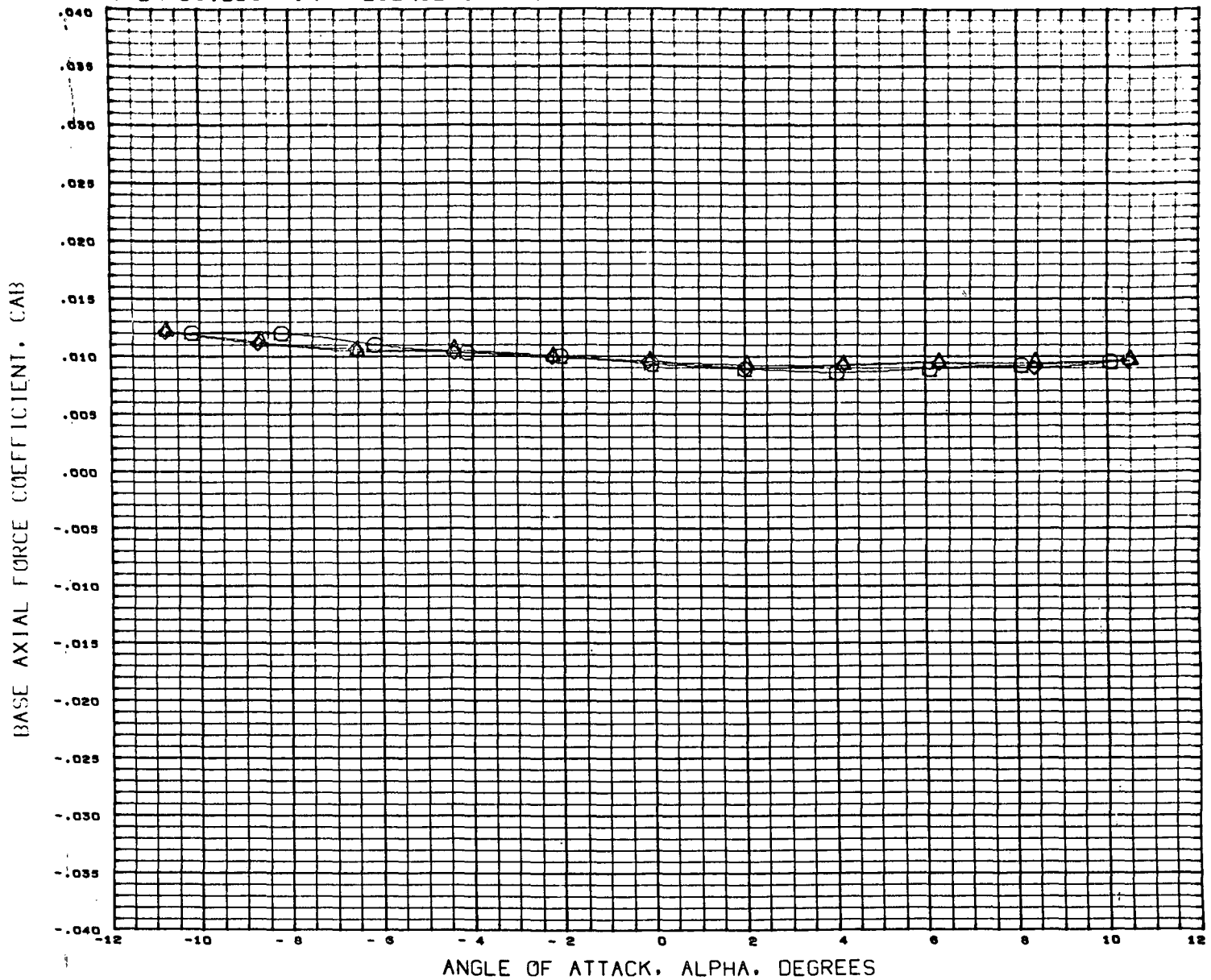
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 19.6360 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.958

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

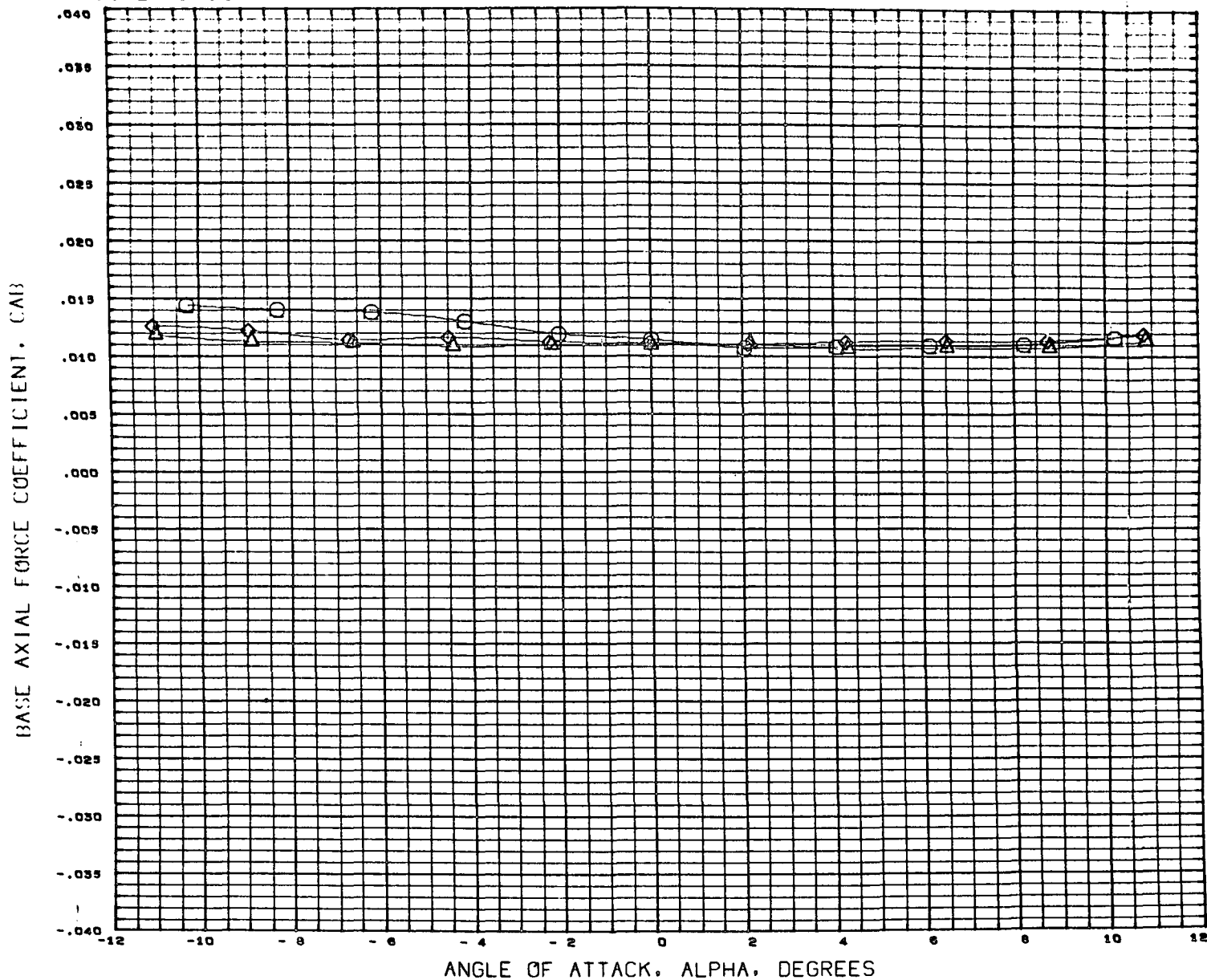
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.599

A

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



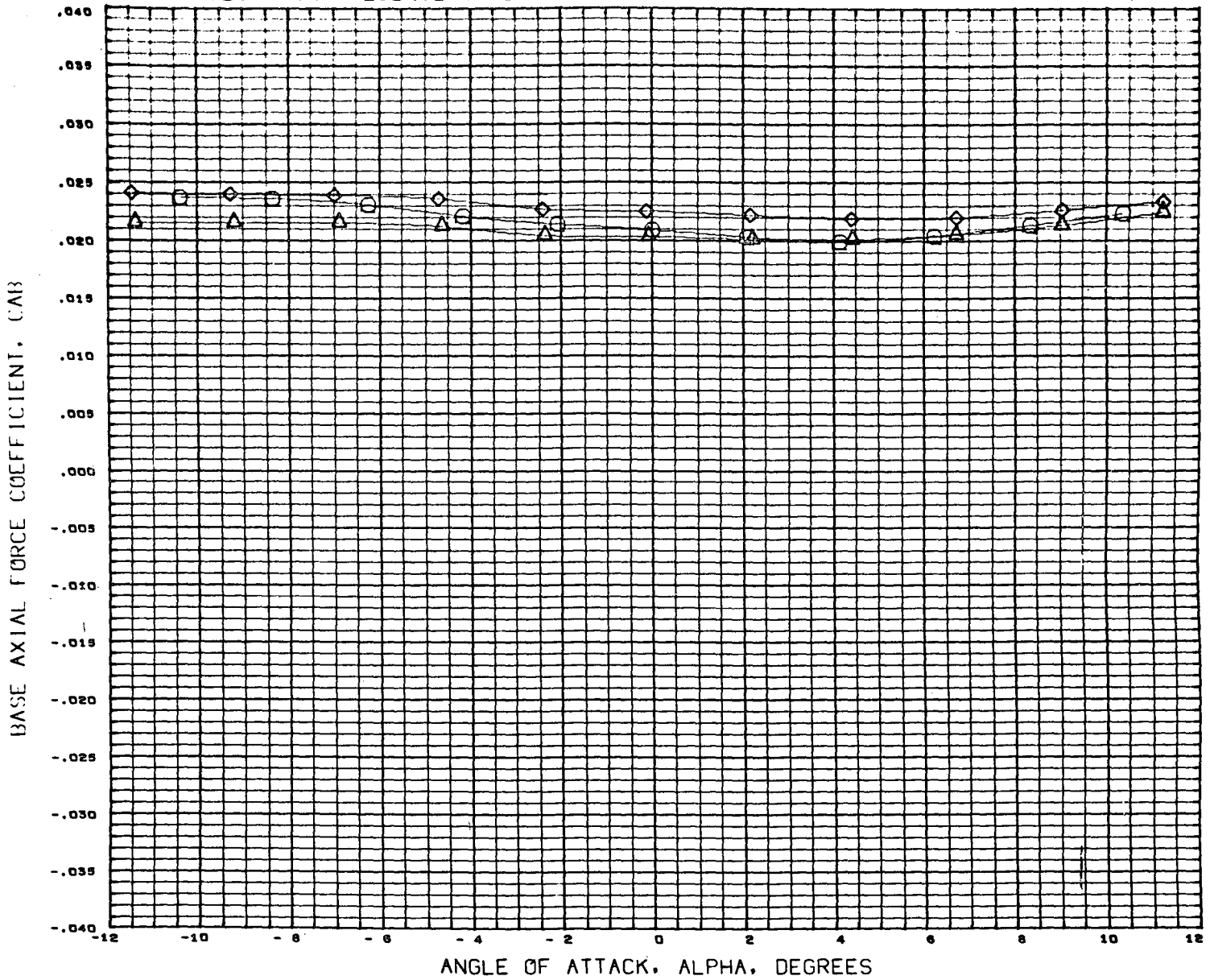
| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|----------|--------|-----------------------------------|
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| (H3213A) | △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.897

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



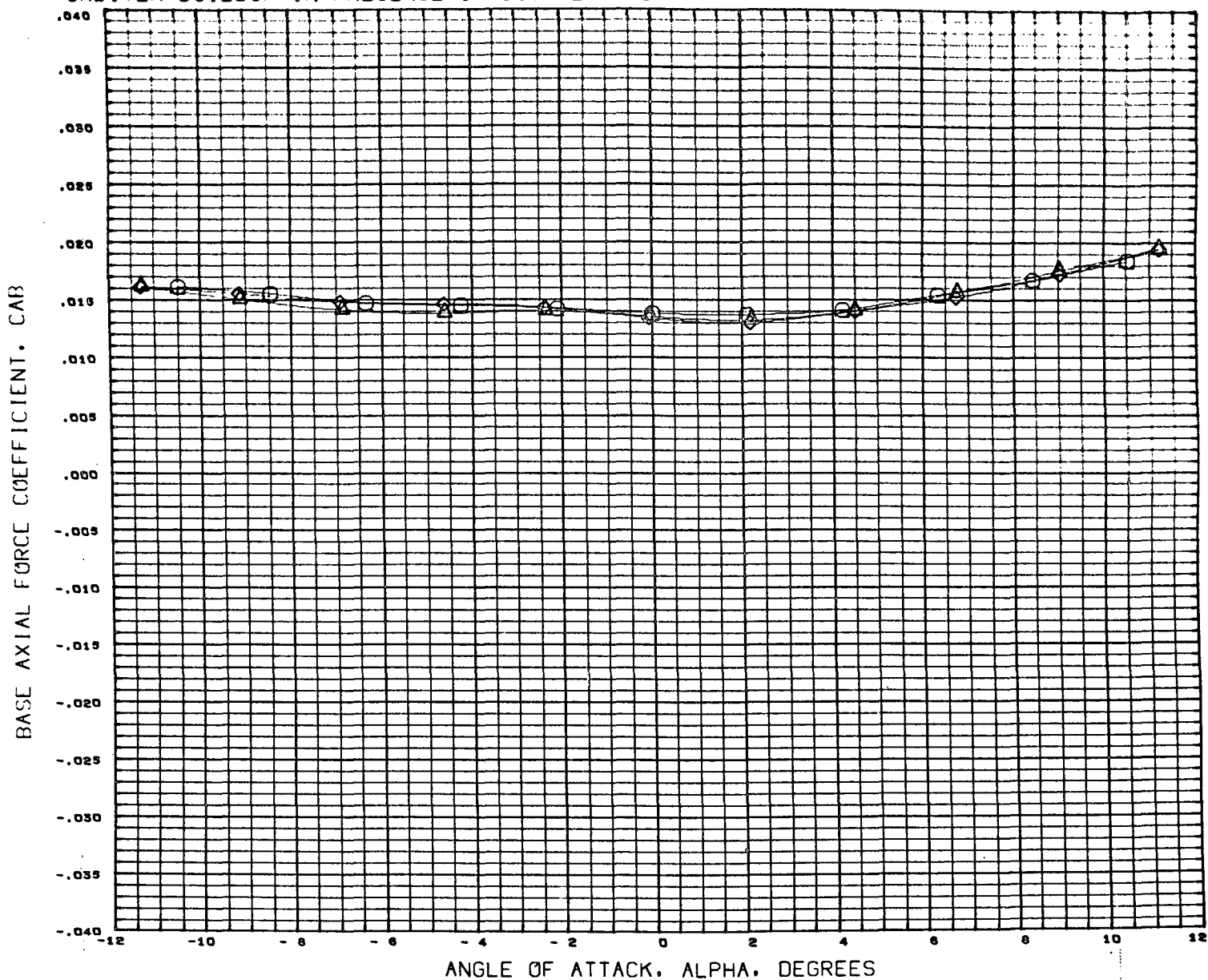
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|-----------------|-----------------------------------|
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| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



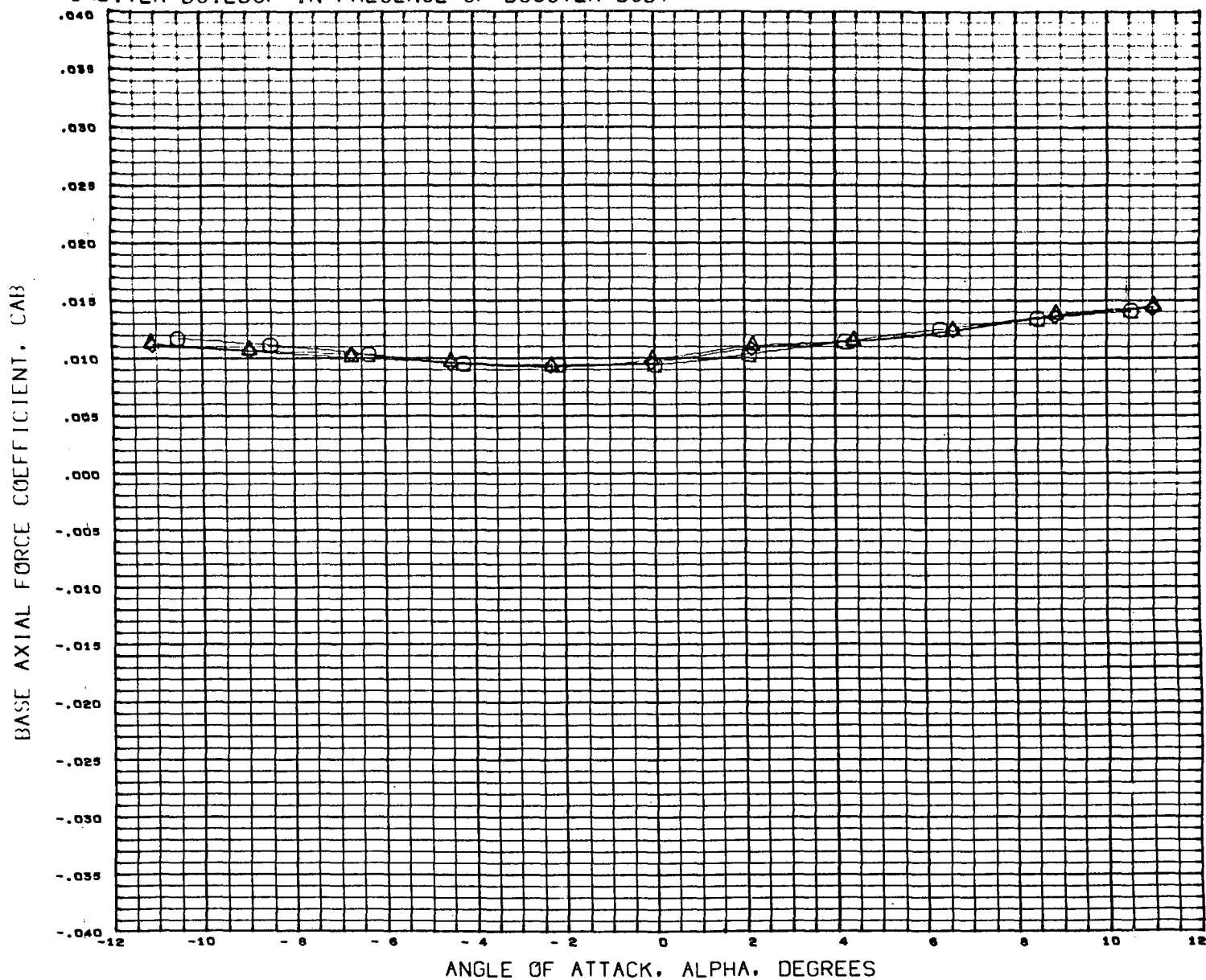
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|-----------------|-----------------------------------|
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| (H3213A) △ | MSFC490 NR/GD LAUNCH B20+BSW17 |
| (H3214A) ◇ | MSFC490 NR/GD LAUNCH B20+BSW17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.469

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (H3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

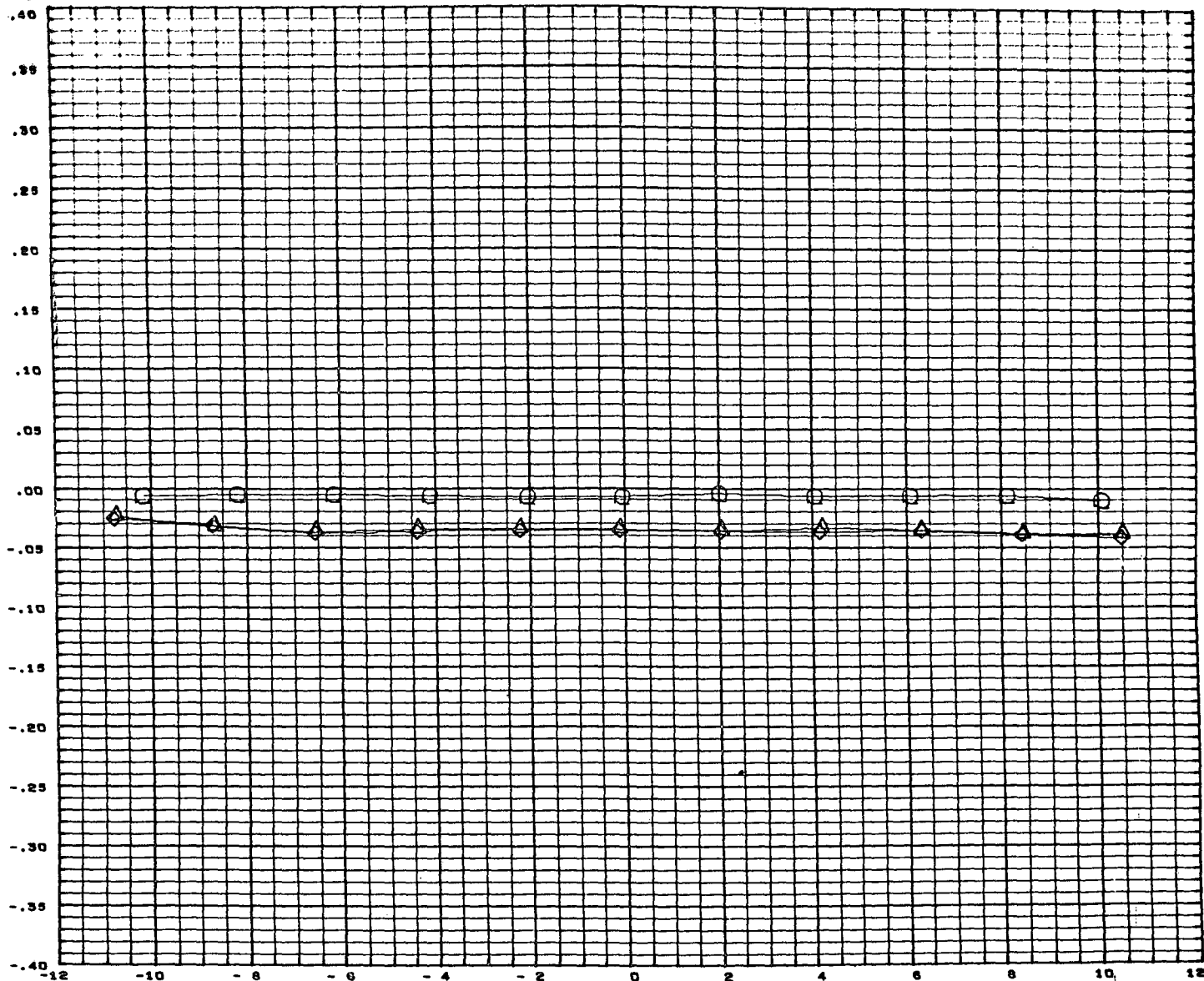
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.958

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - (MAIN CENTER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

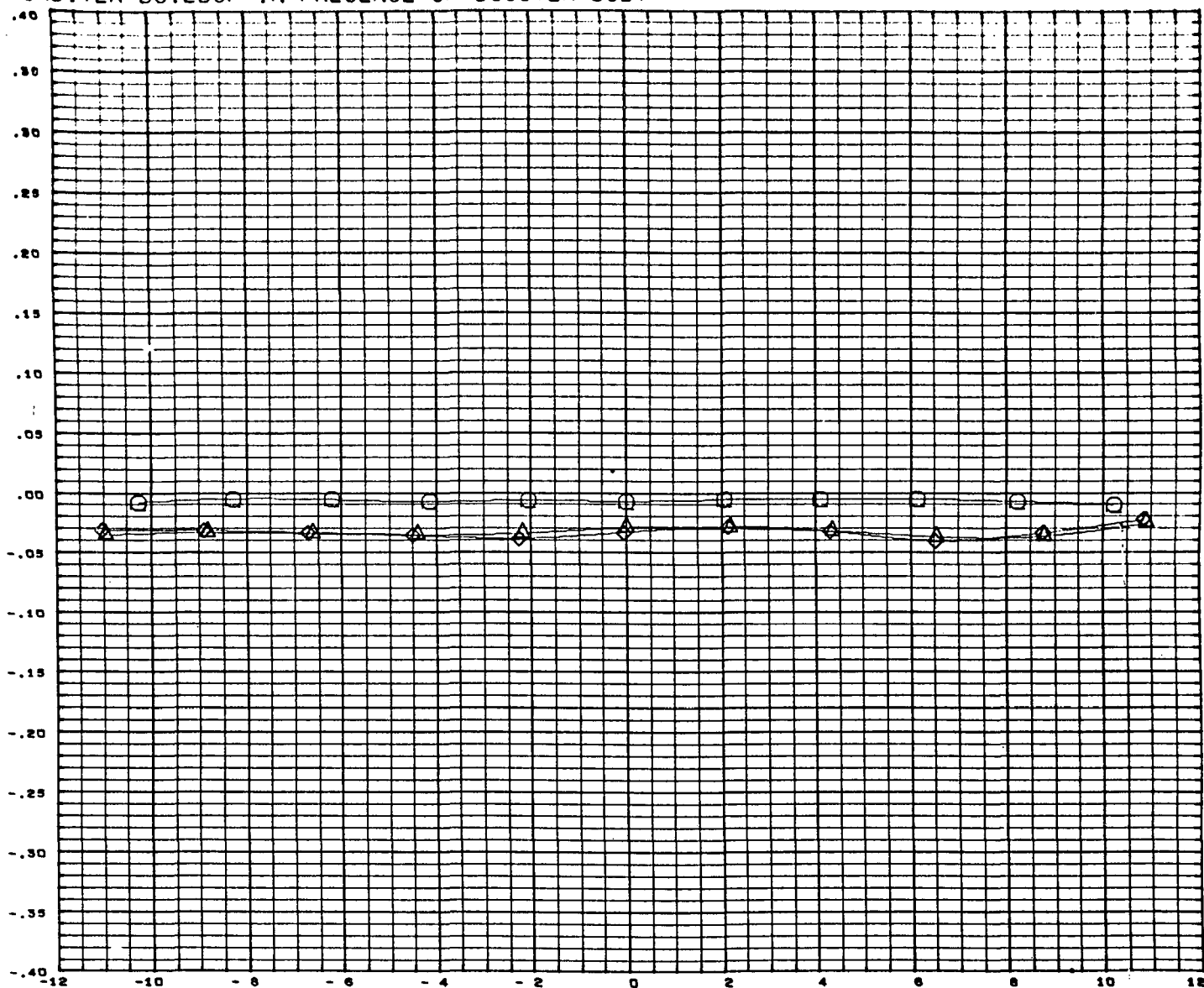
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 0.999

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMALP (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13208A) ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (13213A) △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13214A) ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

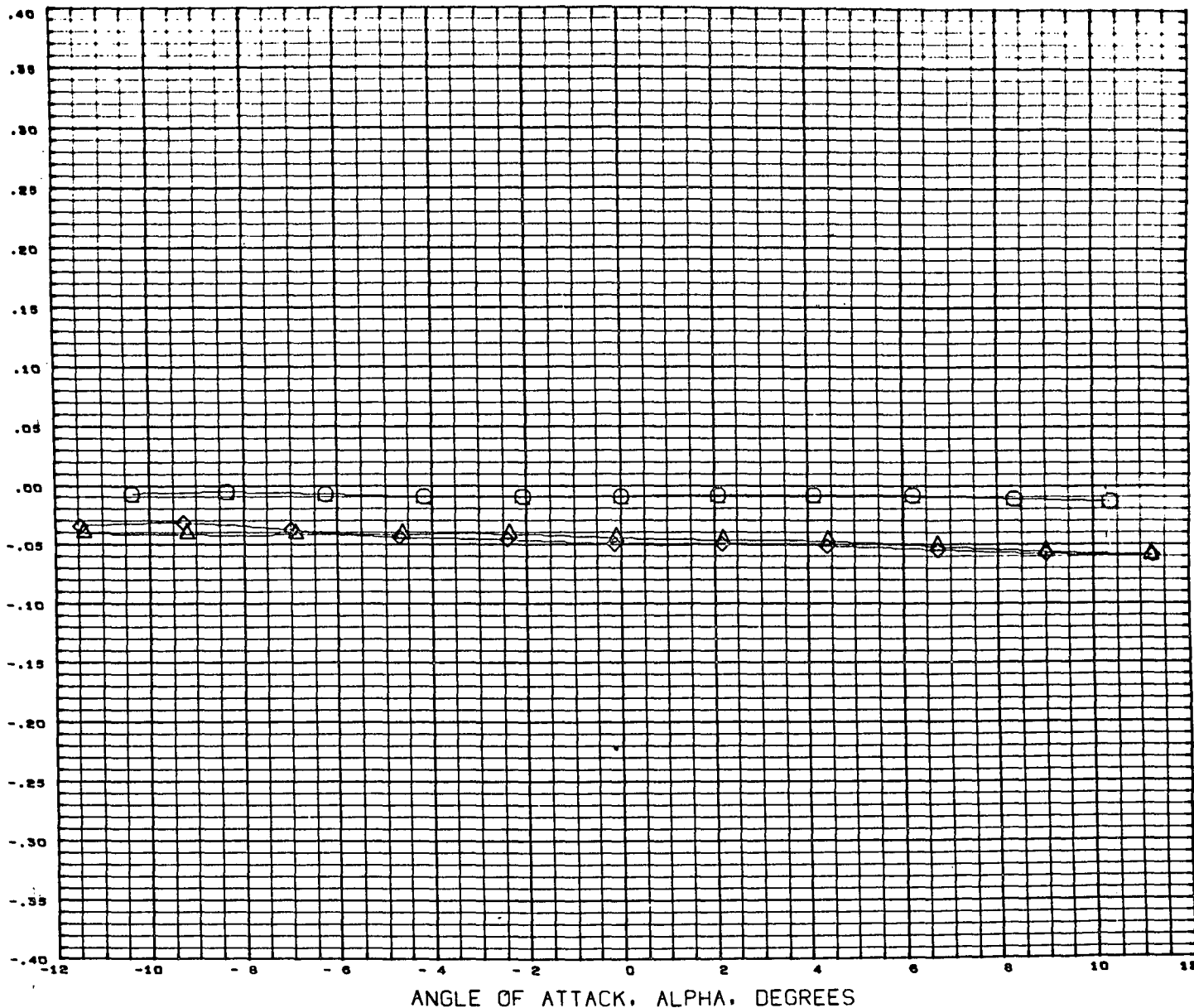
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0930 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.897

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAIP (PER PERCENT)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

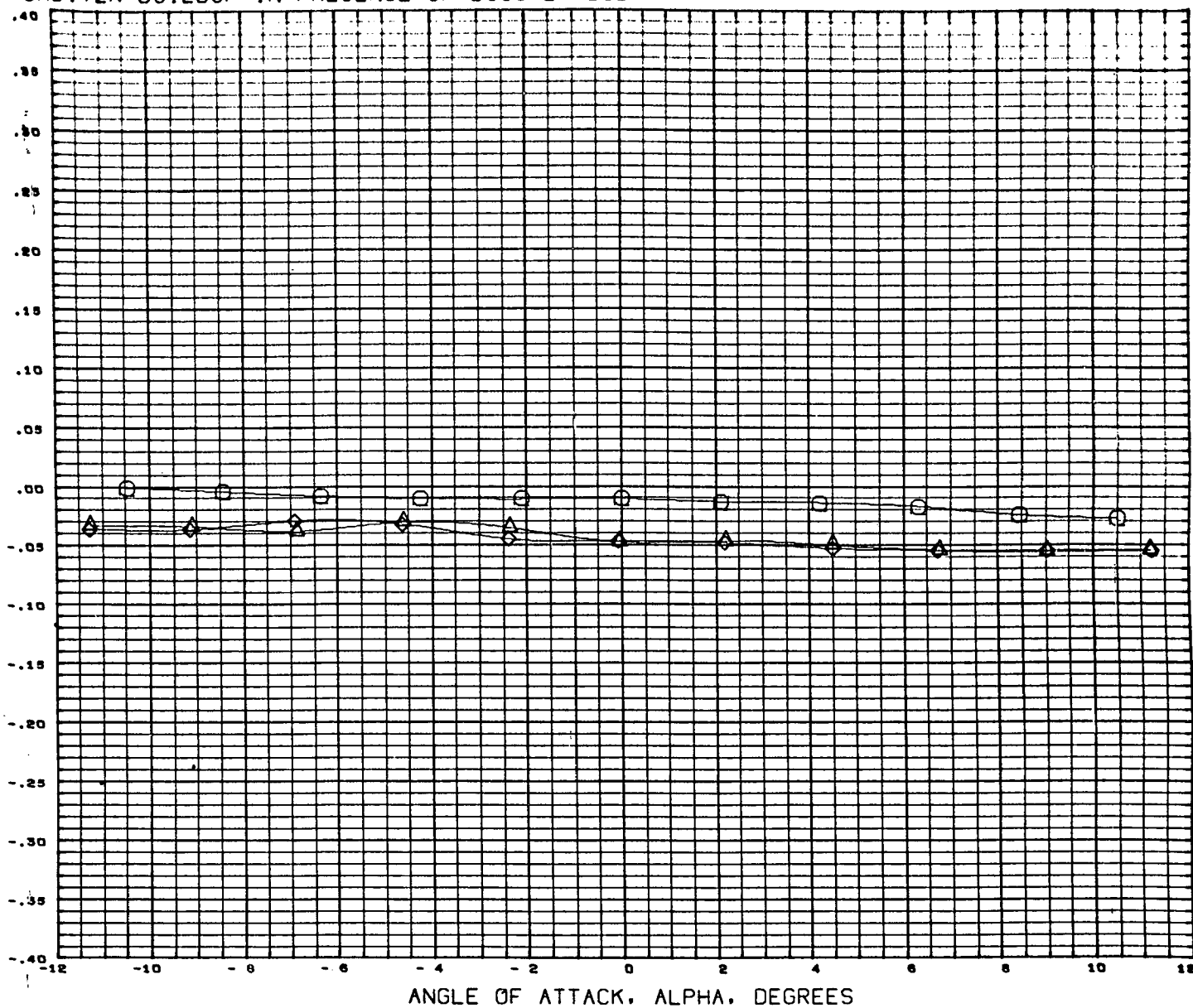
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

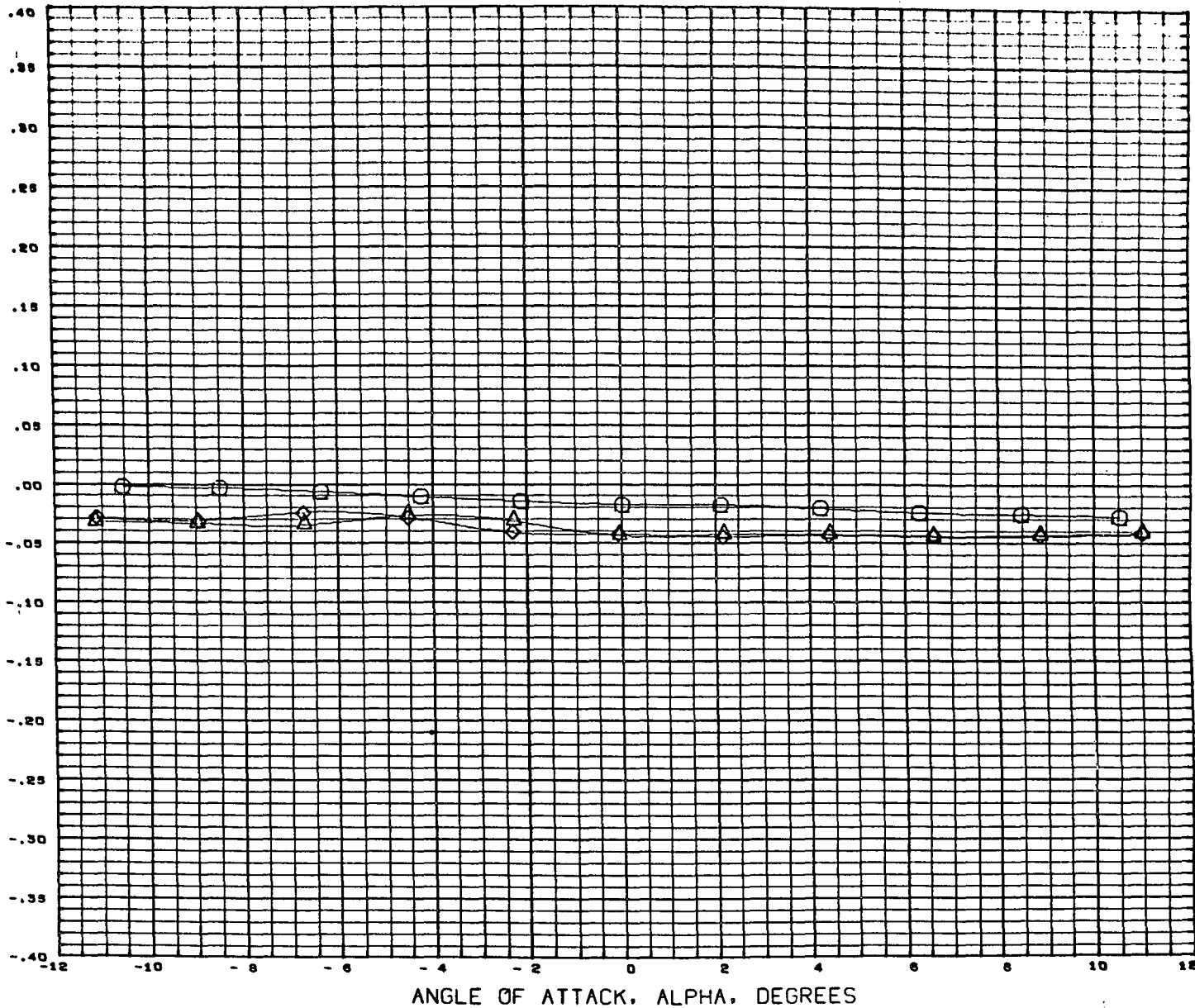
| BETA | POSITN | ORBNIC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0950 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.469

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM_{AP} (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY



| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|----------|--------|-----------------------------------|
| (13208A) | ○ | MSFC490 NR/GD LAUNCH B20+85 |
| (13213A) | △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13214A) | ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

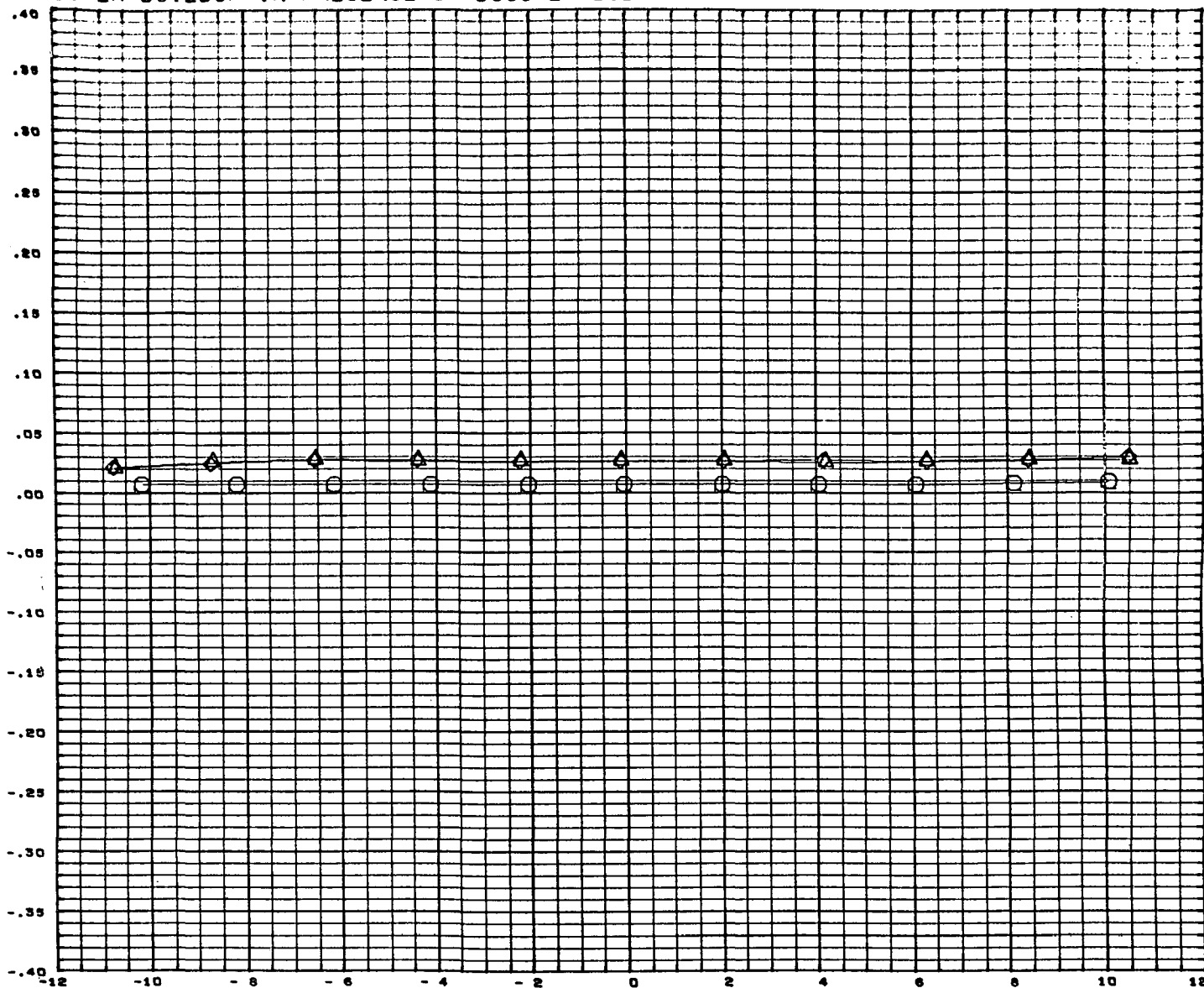
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.958

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

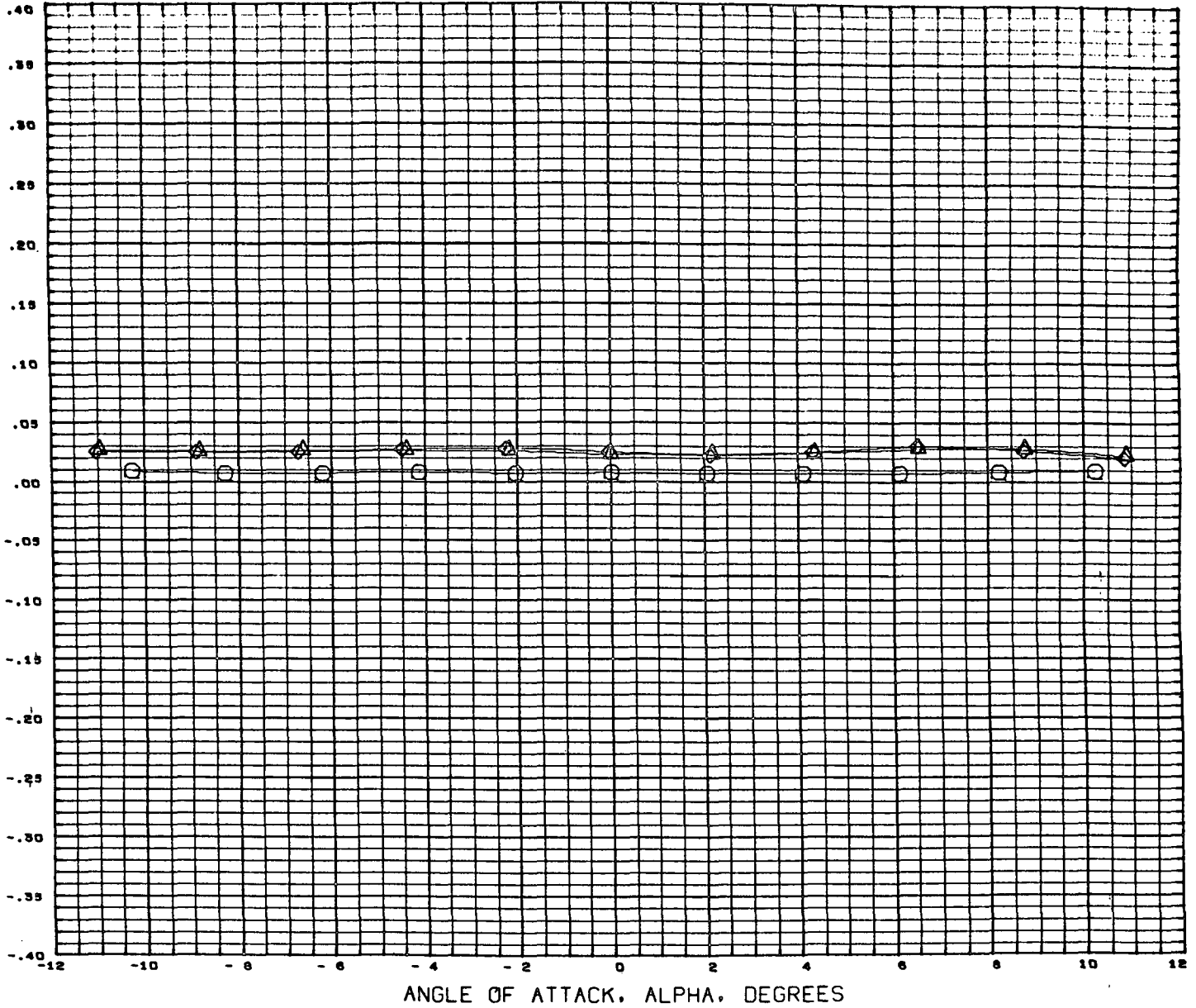
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|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.599

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13208A) ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (13213A) △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13214A) ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

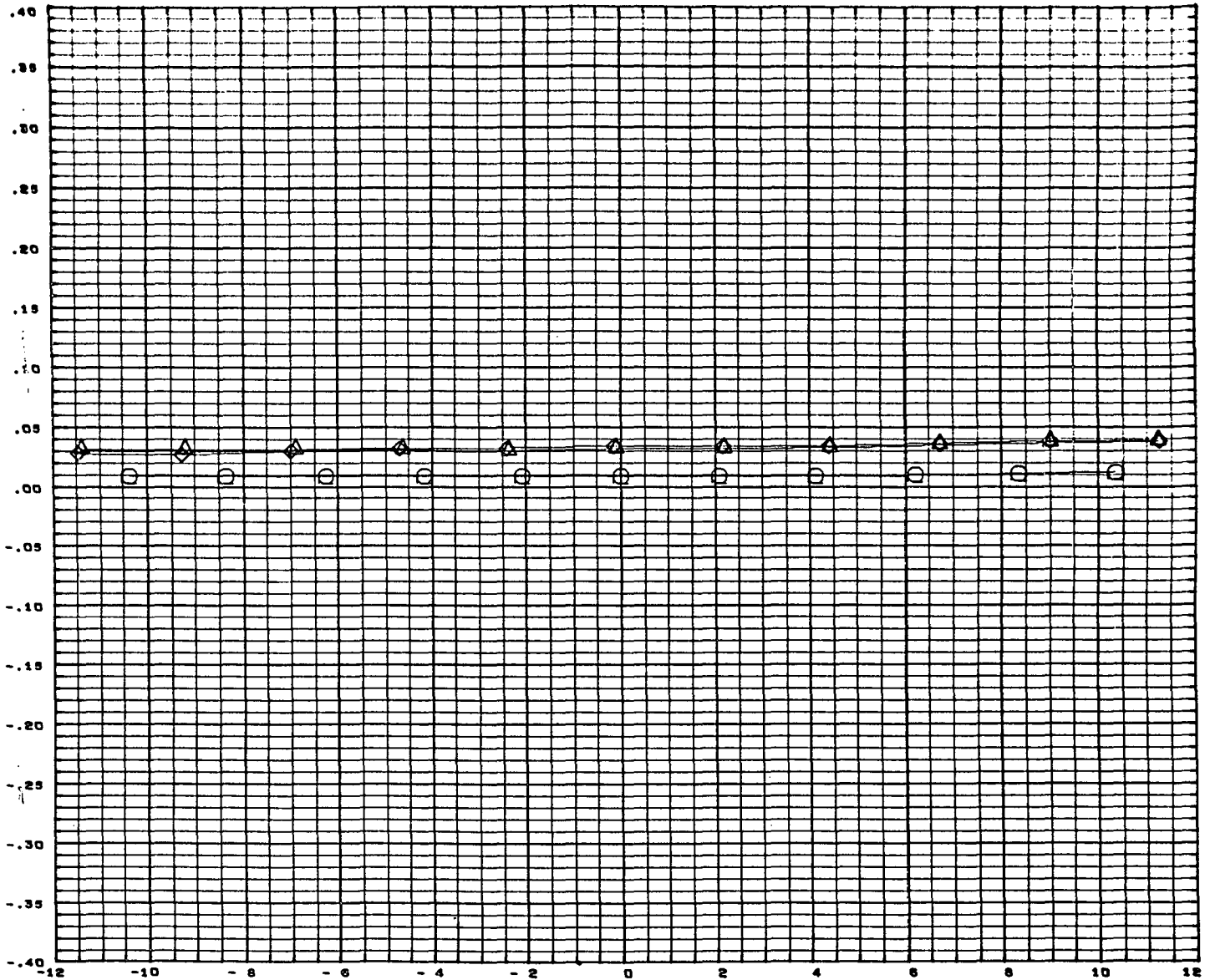
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 19.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.897

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13208A) ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (13213A) △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13214A) ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

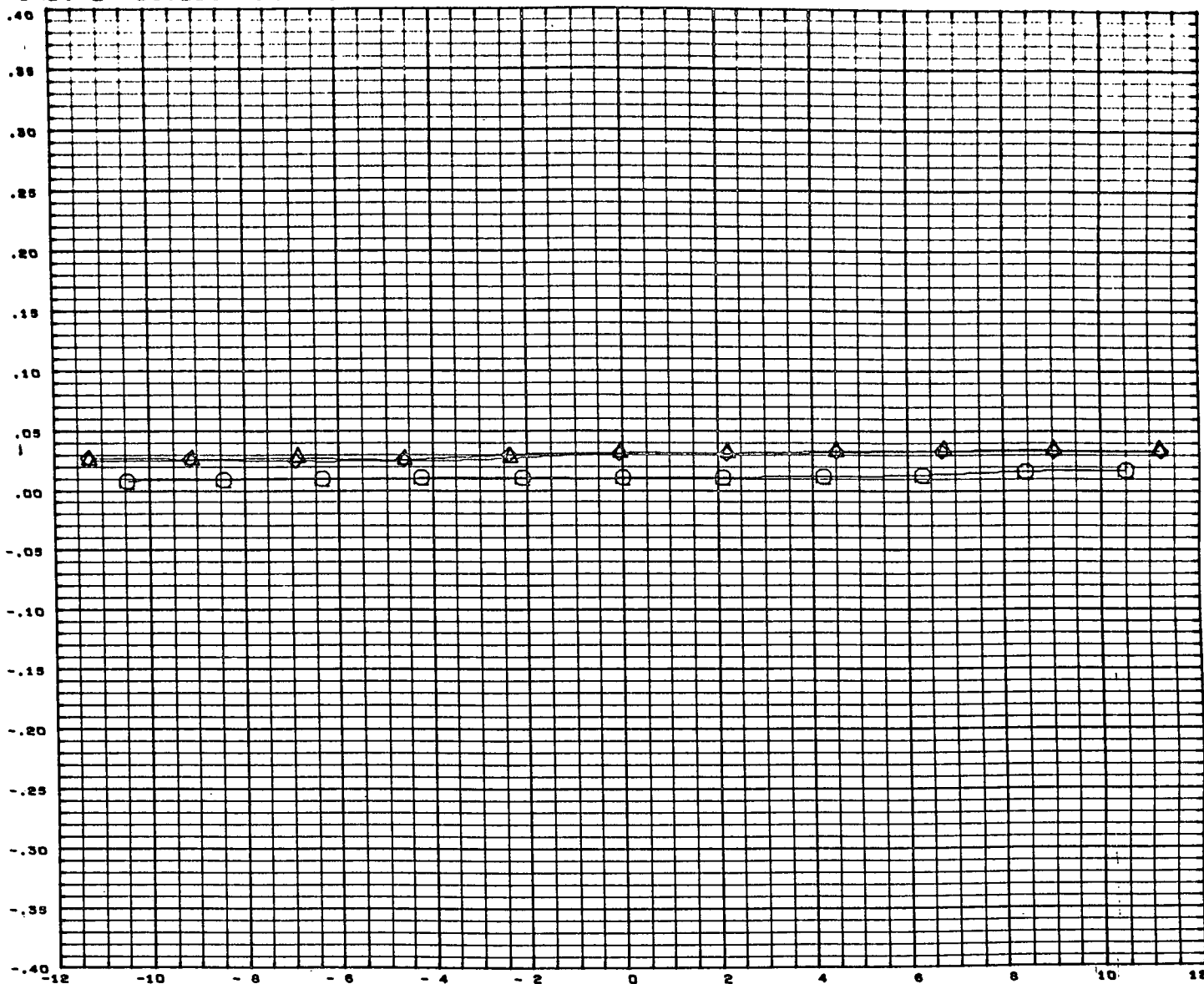
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.096

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13208A) ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (13213A) △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13214A) ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

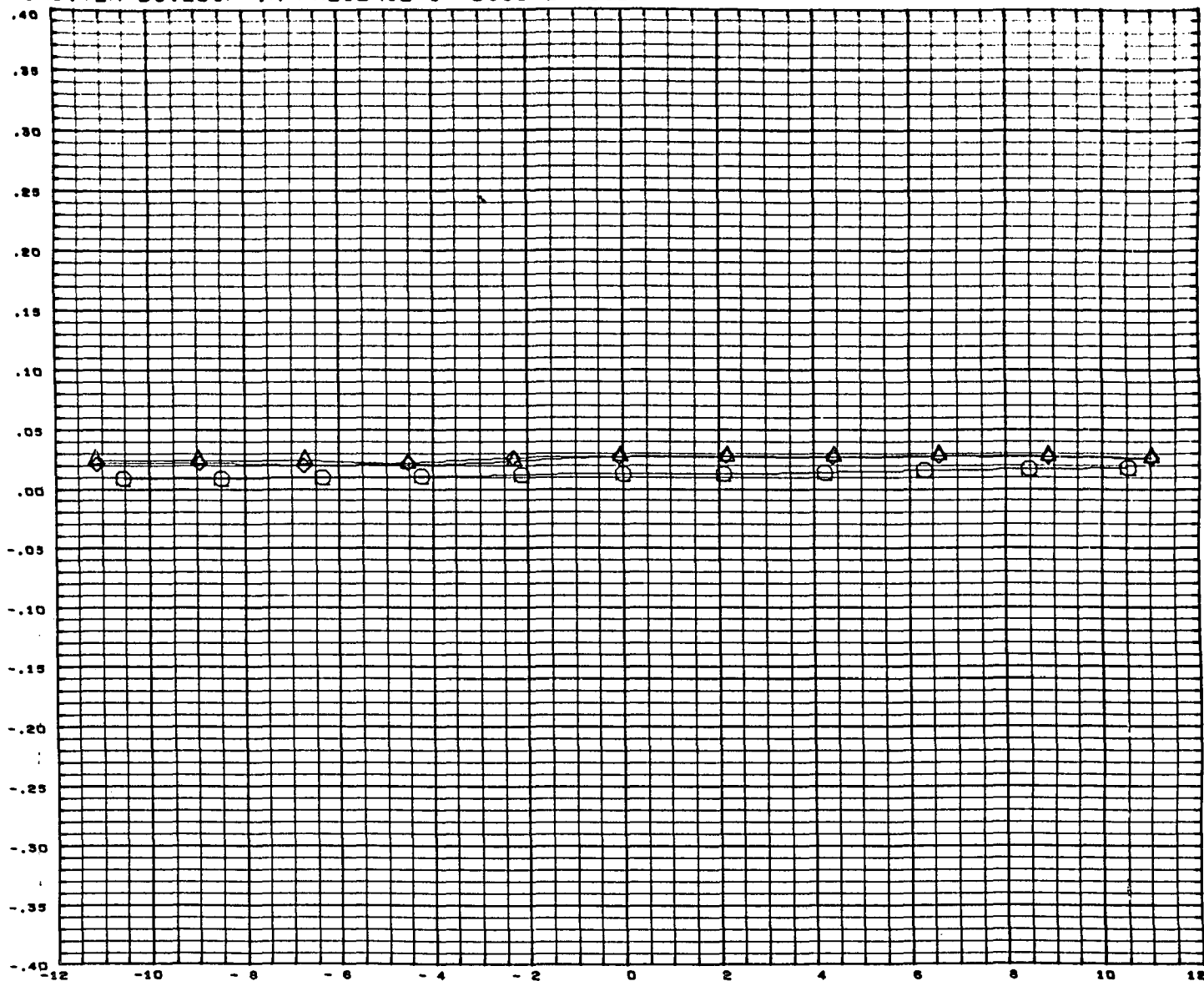
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.469

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNAIPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (13214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.958

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE (CLM_{AP}) (PER DICTION)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (J3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (J3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (J3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

MACH NUMBER

| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

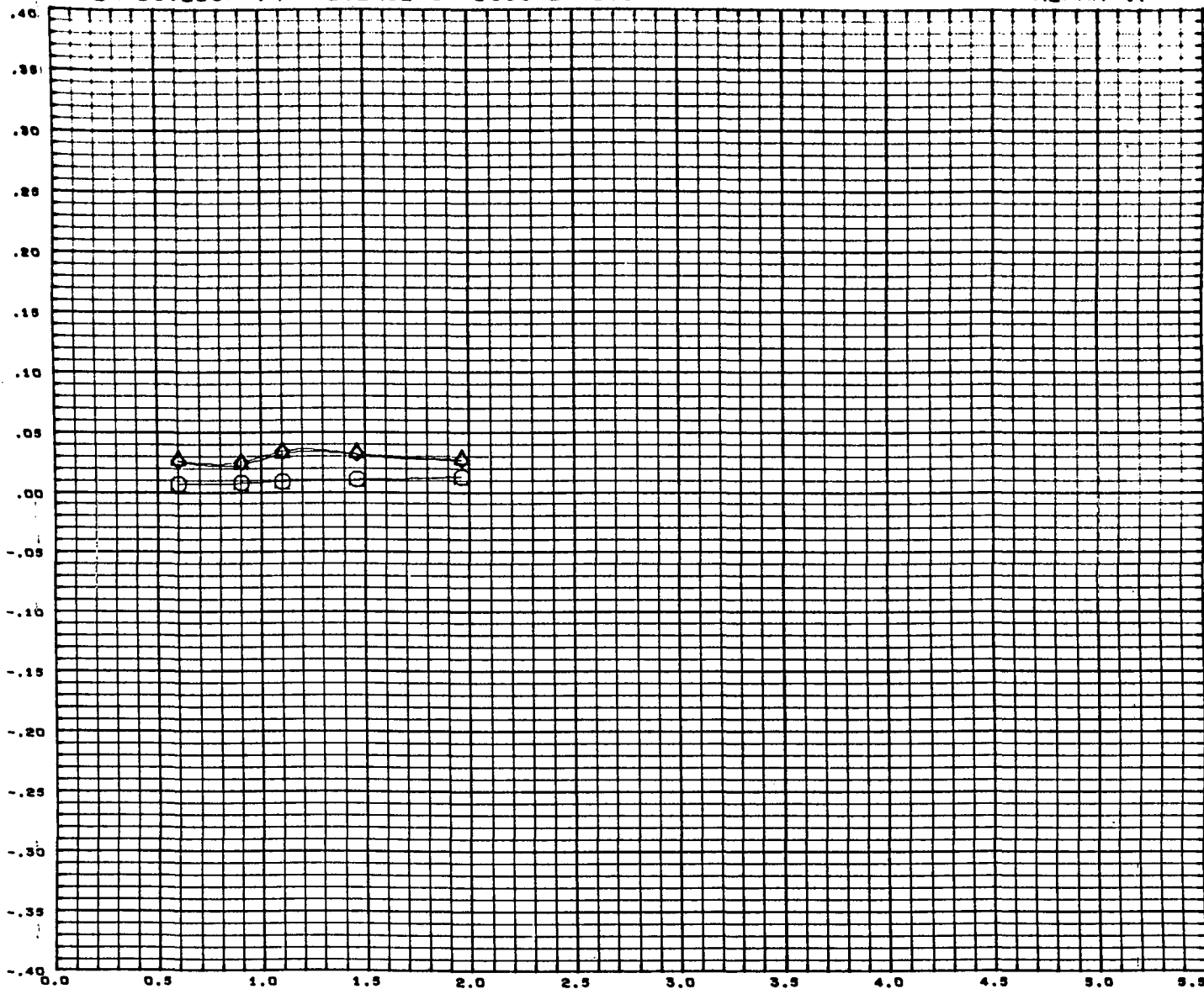
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| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

ALPHA=0.

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (J3208A) ○ | MSFC490 NR/GD LAUNCH B20+B5 |
| (J3213A) △ | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (J3214A) ◇ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRF | 0.0000 |
| YMRF | 0.0000 |
| ZMRF | 0.0000 |
| SCALE | 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (K3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (K3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (K3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

MACH NUMBER

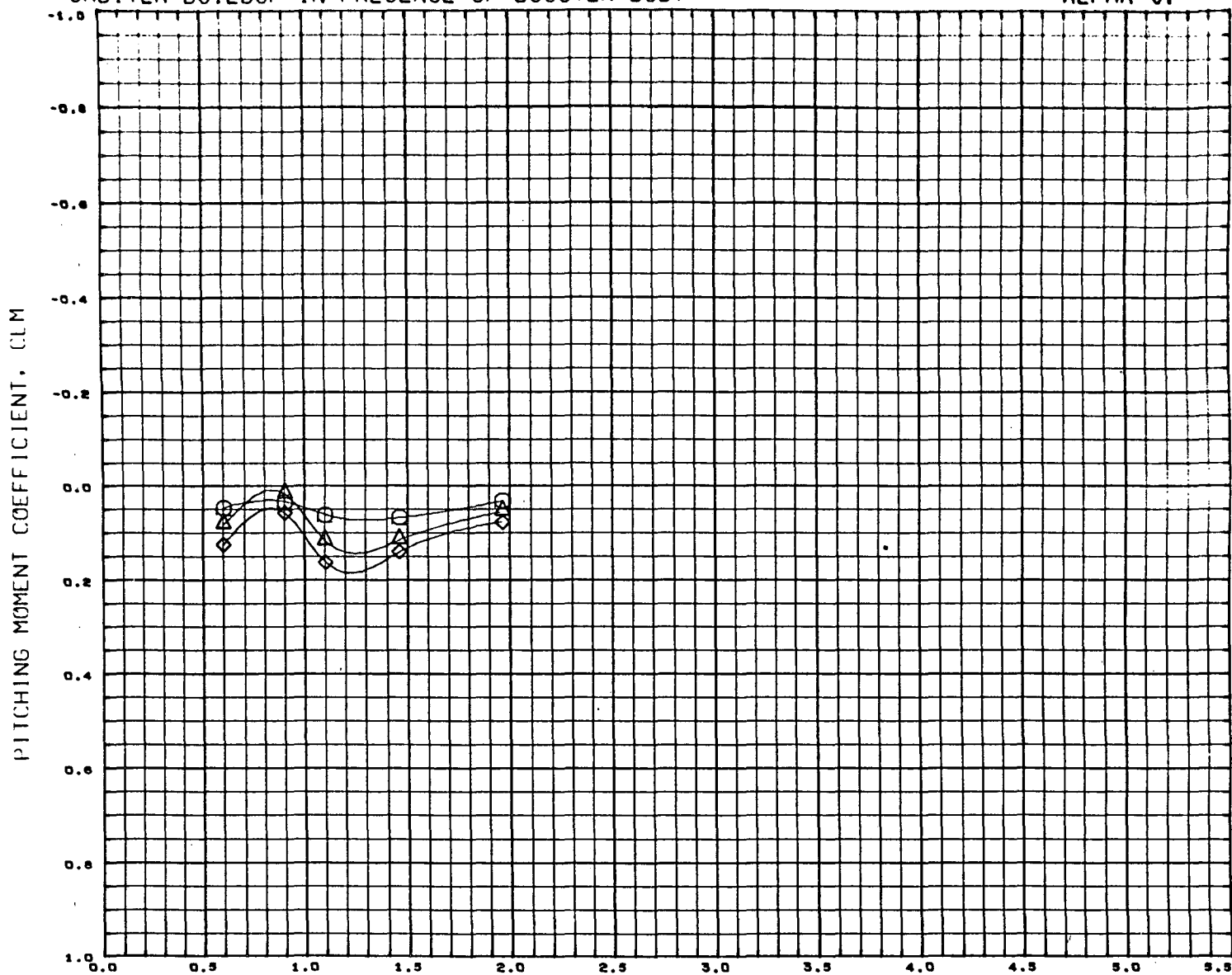
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

ALPHA=0.



MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (K3208A) ○ | MSFC490 NR/GD LAUNCH B20+B8 |
| (K3213A) △ | MSFC490 NR/GD LAUNCH B20+B3W17 |
| (K3214A) ◇ | MSFC490 NR/GD LAUNCH B20+B3W17V17 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

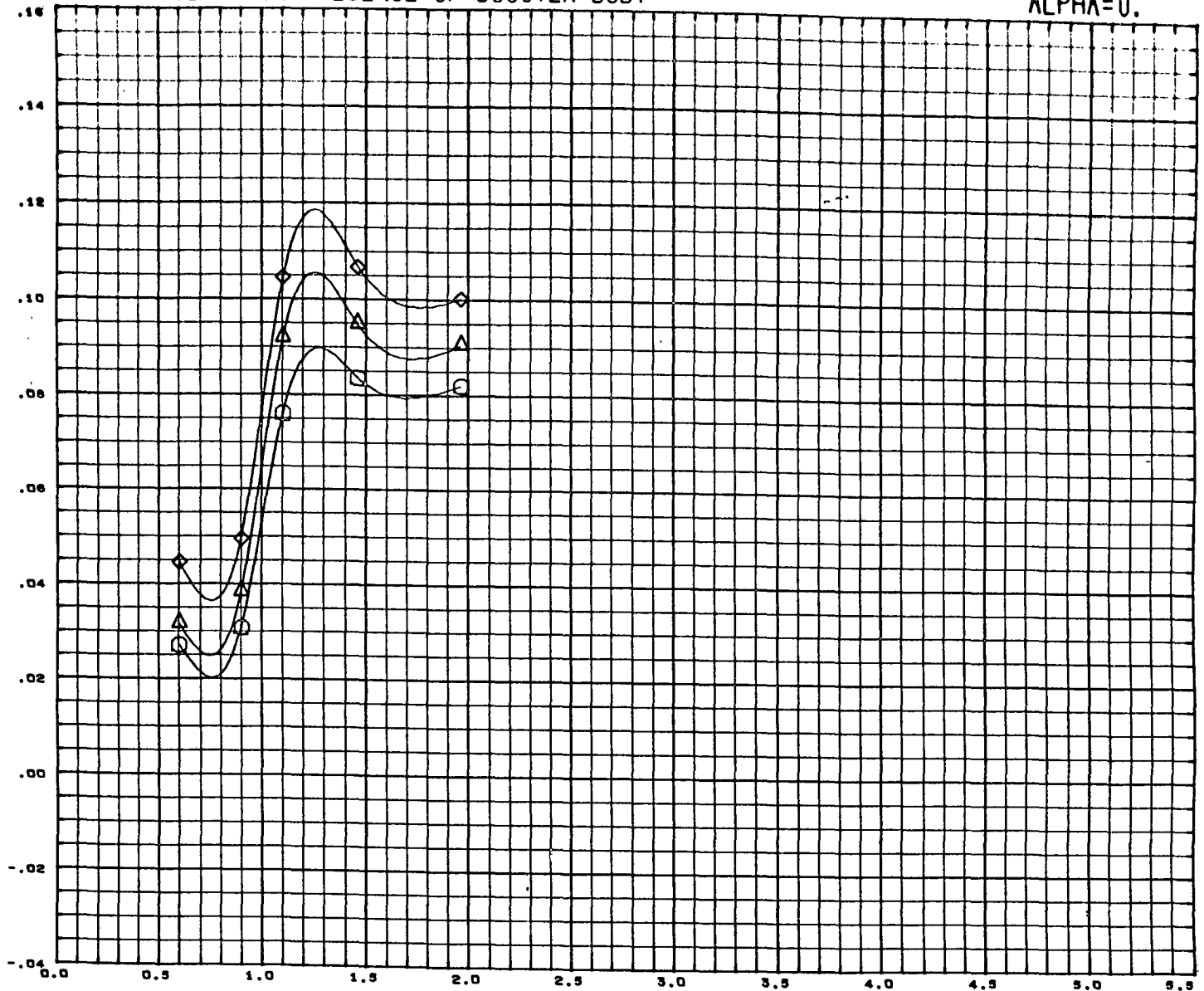
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| BREF | 6.0990 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (K3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (K3213A) | MSFC490 NR/GD LAUNCH B20+B5W17 |
| (K3214A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |

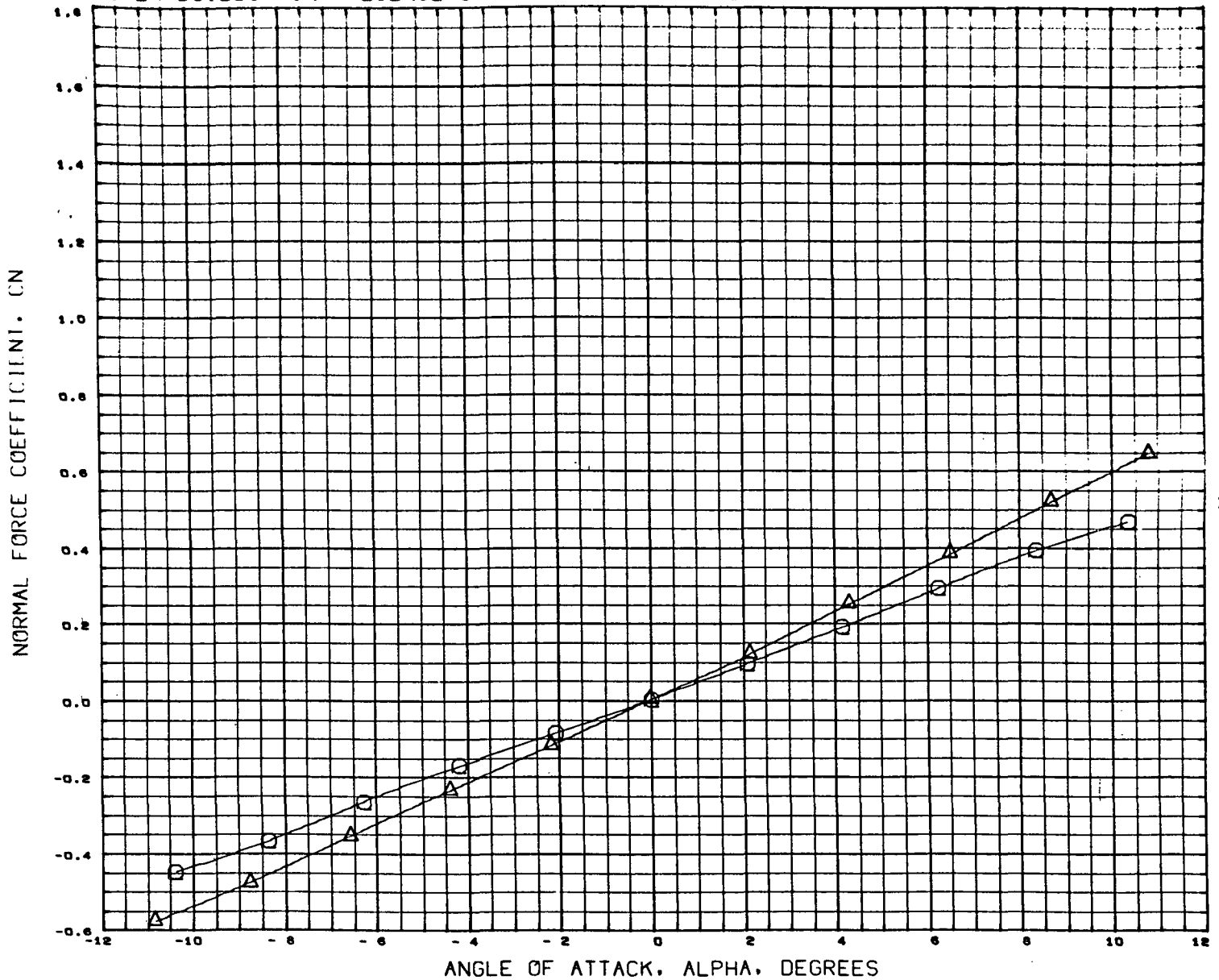
ALPHA 0.000

MACH NUMBER

| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | 50 IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMPP | 0.0000 | |
| YMPP | 0.0000 | |
| ZMPP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

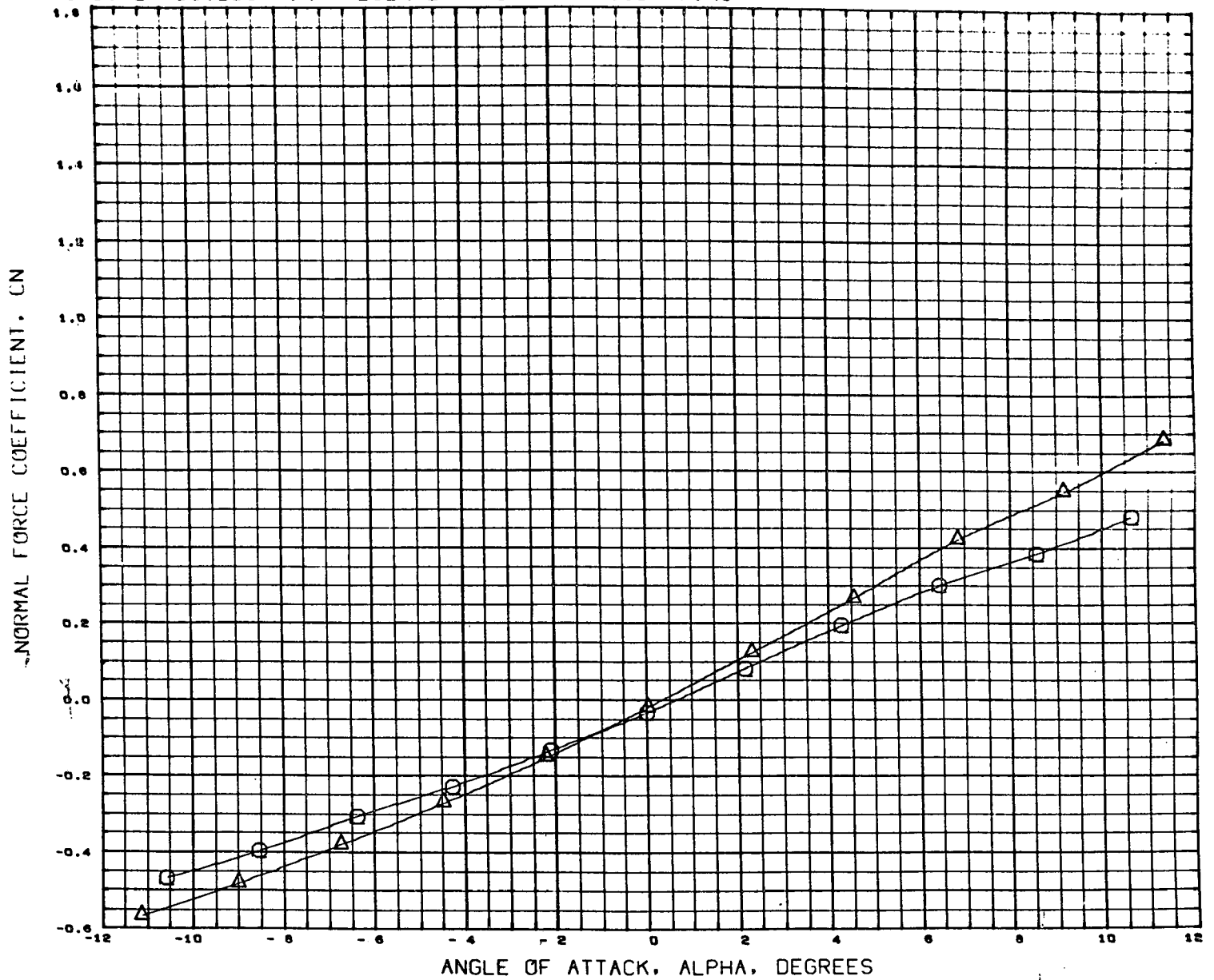


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) ○ MSFC490 NR/GD LAUNCH B20W14+B5
 (H3210A) △ MSFC490 NR/GD LAUNCH B20W14+B9W17

| BETA | ELVATR | ELVORS | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRF | 0.0000 |
| | | | | YMRF | 0.0000 |
| | | | | ZMRF | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.601

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

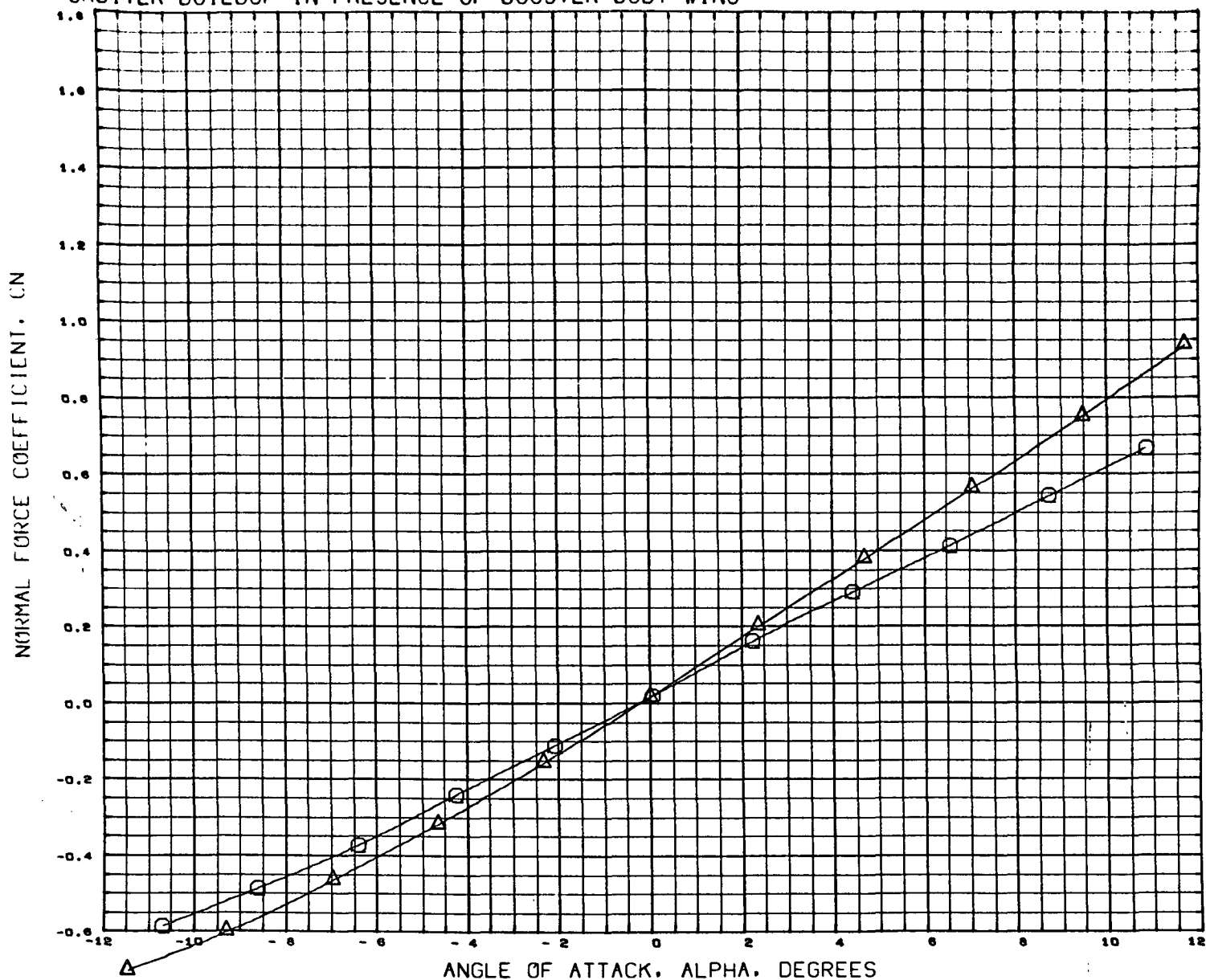


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3209A) ○ | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3210A) △ | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|--------|
| 0.000 | 0.000 | 1.000 | SREF | 15.6560 | SQ IN |
| 0.000 | 0.000 | 1.000 | LREF | 3.0950 | INCHES |
| | | | BREF | 0.0990 | INCHES |
| | | | XMRP | 0.0000 | |
| | | | YMRP | 0.0000 | |
| | | | ZMRP | 0.0000 | |
| | | | SCALE | 0.0035 | SCALE |

MACH 0.899

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

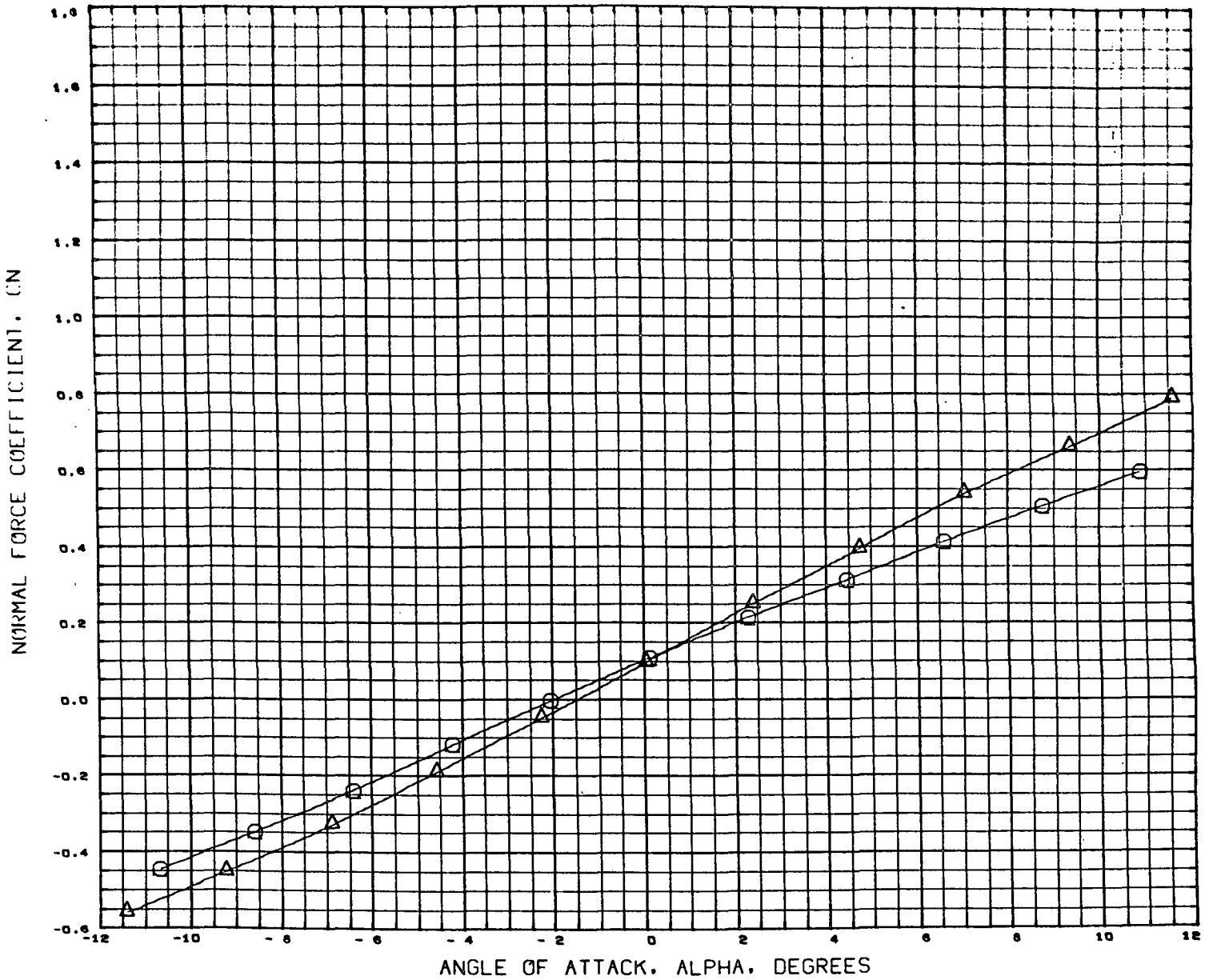


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) ○ MSFC490 NR/GD LAUNCH B20W14+B5
 (H3210A) △ MSFC490 NR/GD LAUNCH B20W14+B5W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6360 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.095

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



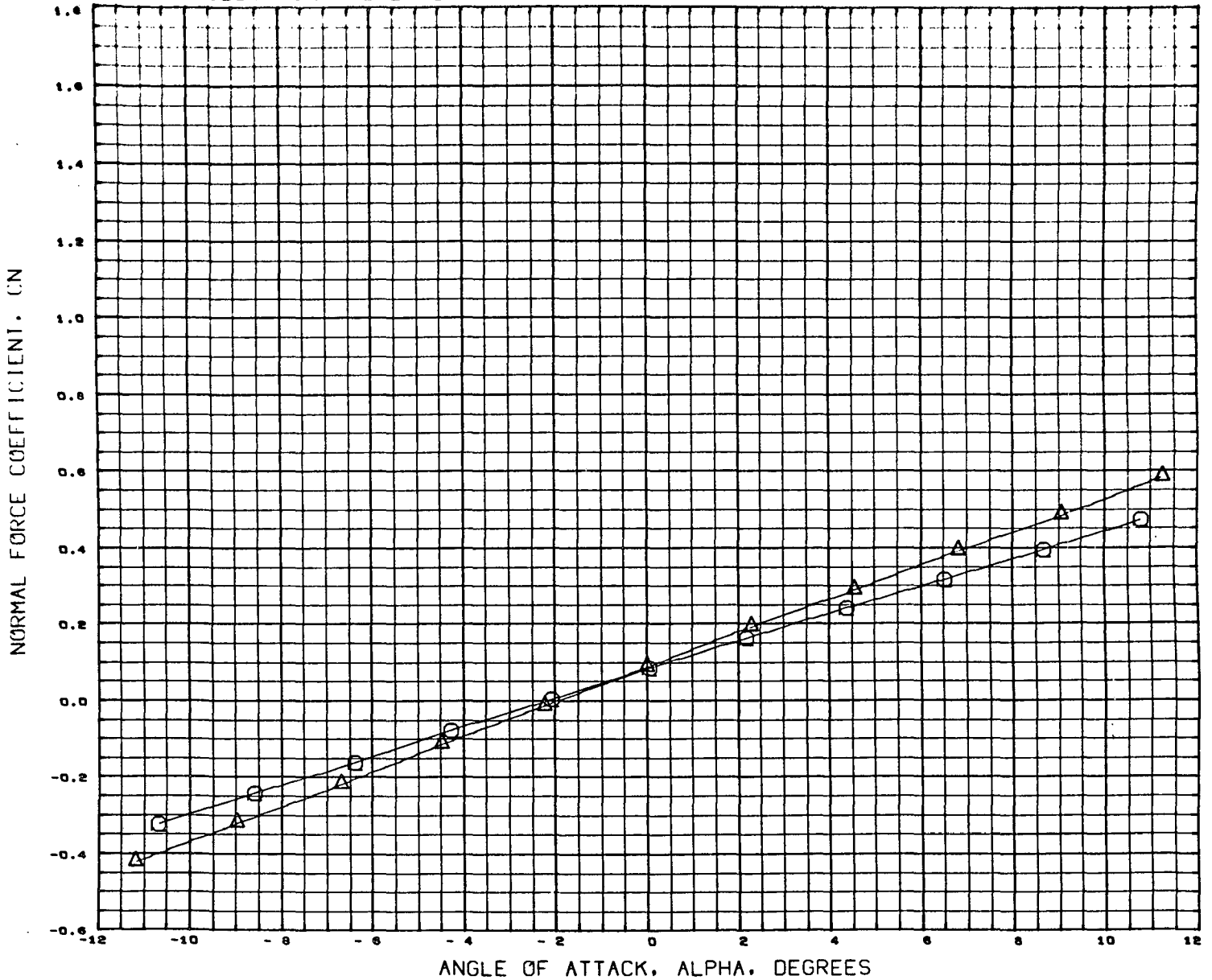
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 (H3209A) ○ MSFC490 NR/GD LAUNCH B20W14+85
 (H3210A) △ MSFC490 NR/GD LAUNCH B20W14+B5W17

BETA ELVATR ELVORB POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
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 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.468

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



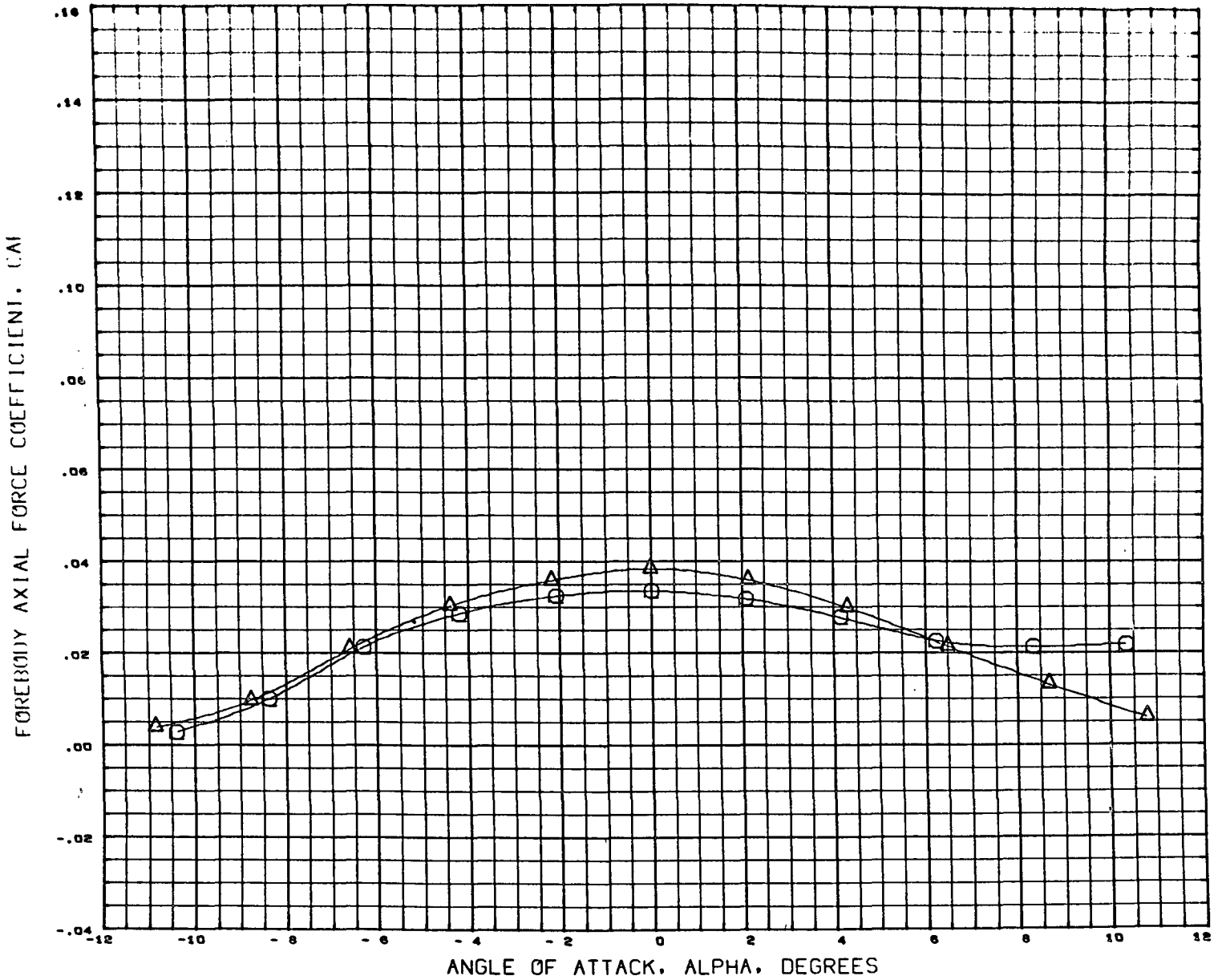
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

BETA ELVATR ELVORB POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.959

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



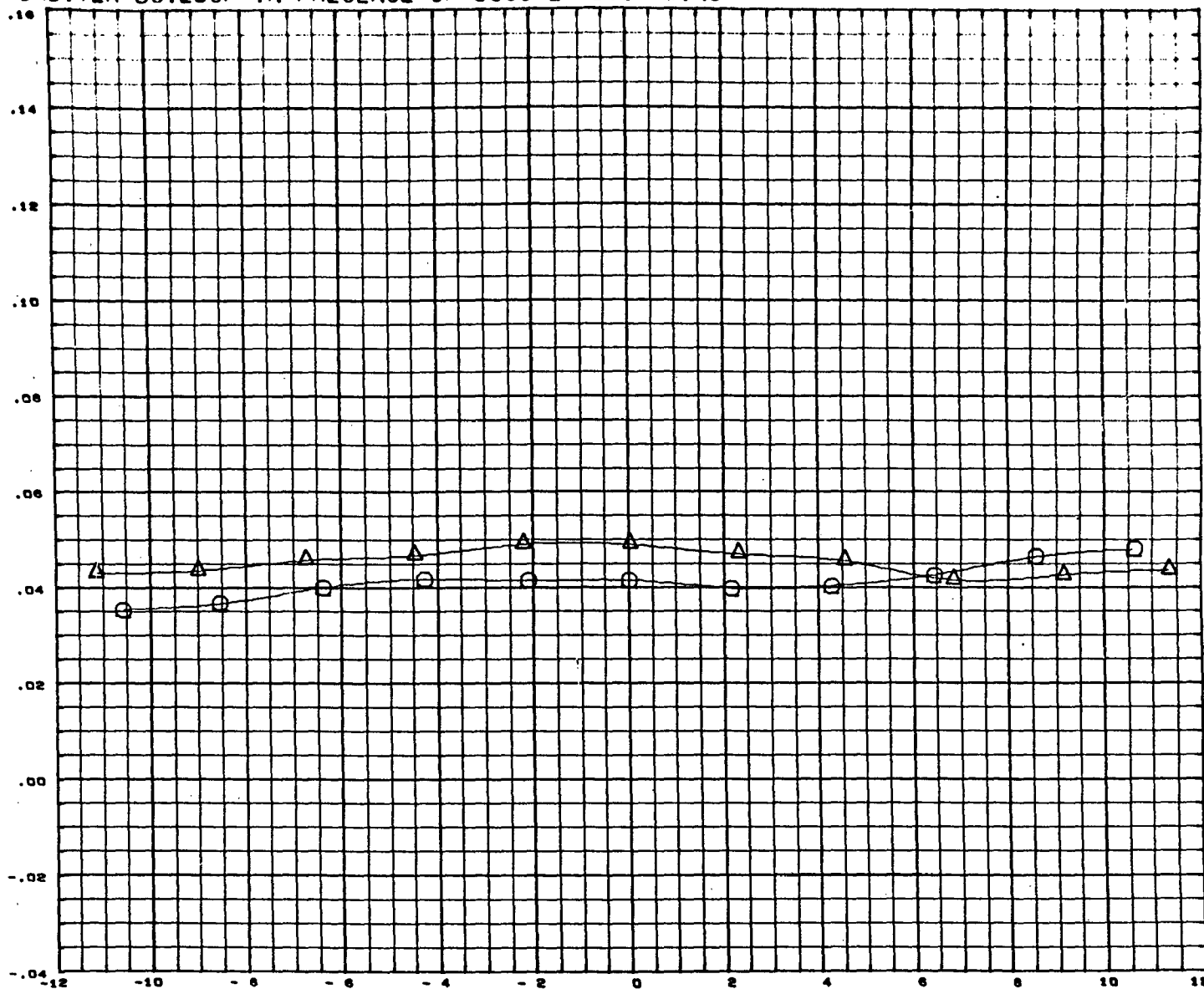
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.601

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

FOREBODY AXIAL FORCE COEFFICIENT, CAF



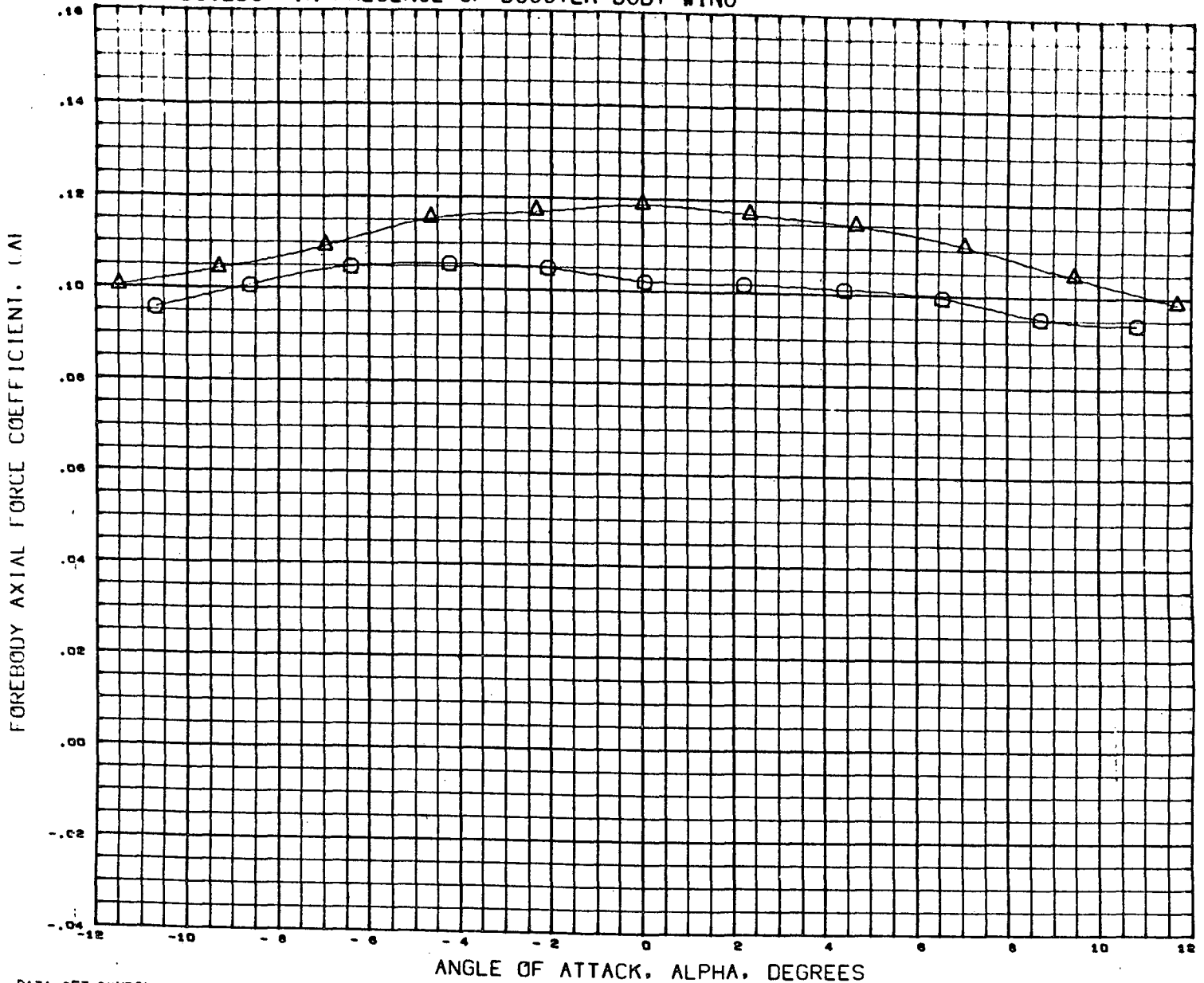
ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3209A) ○ | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3210A) △ | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0930 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.899

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

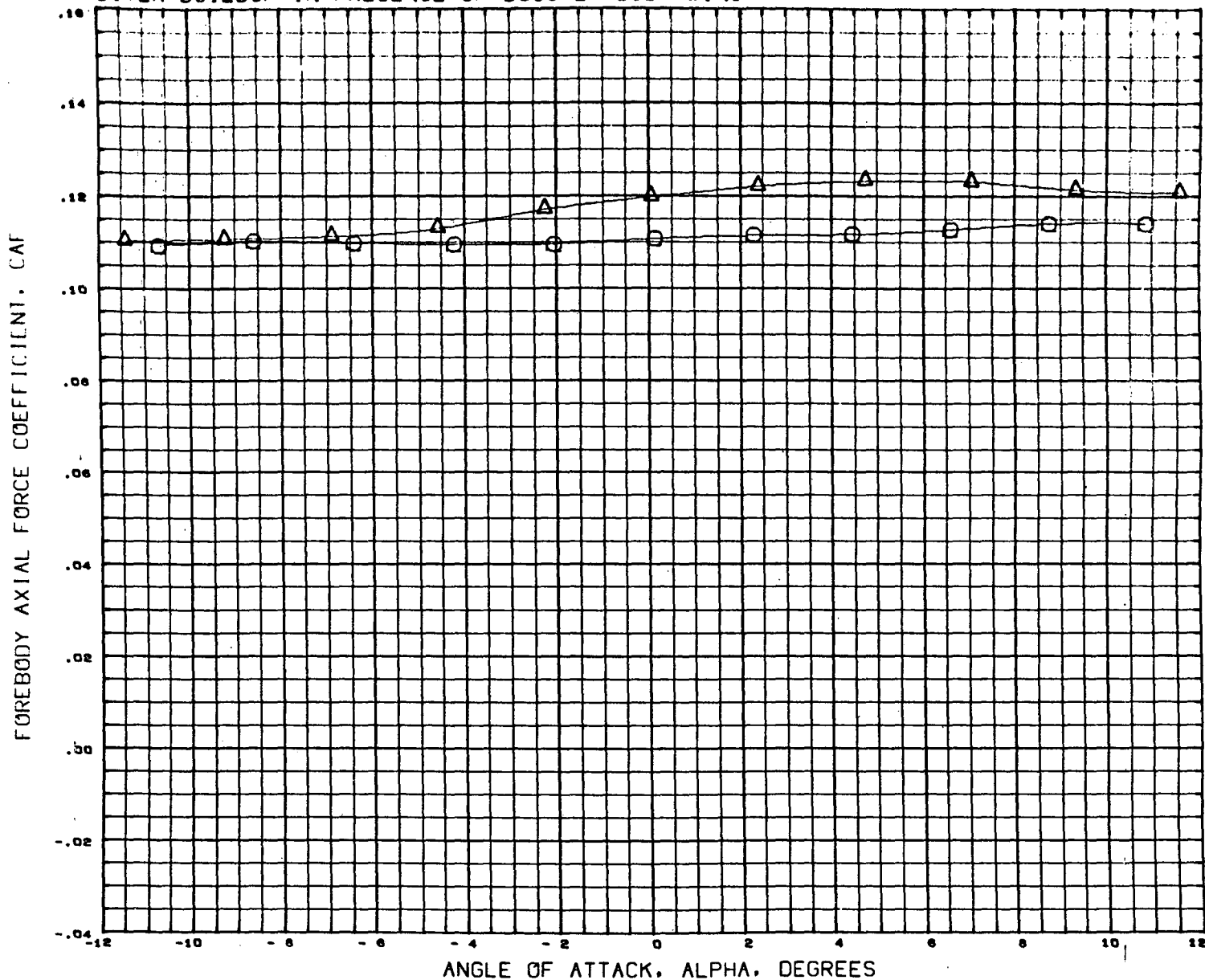


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 0.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.095

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



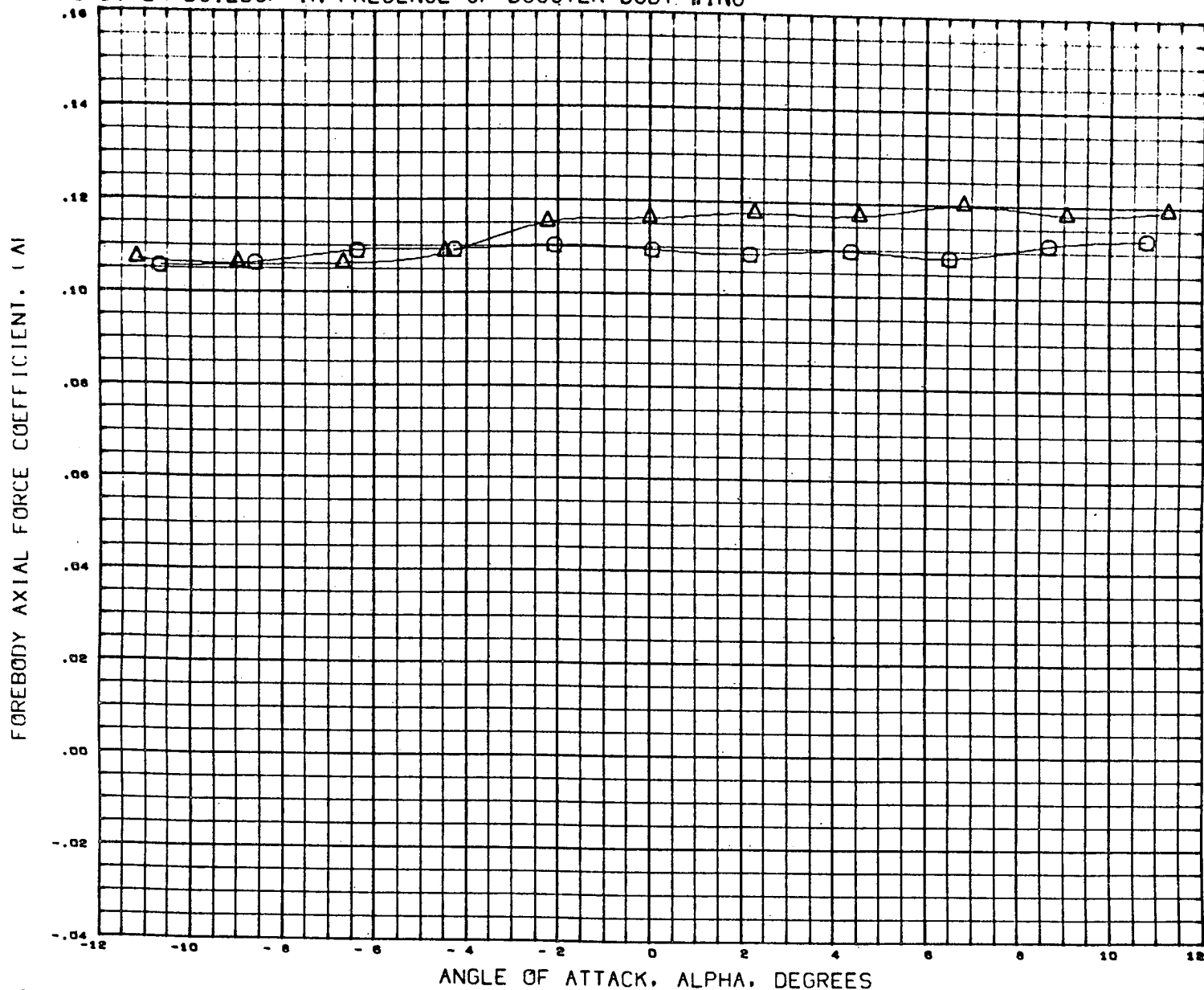
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 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

BETA ELVATR ELVORB POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
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 YMRP 0.0000
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 SCALE 0.0039 SCALE

MACH 1.466

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



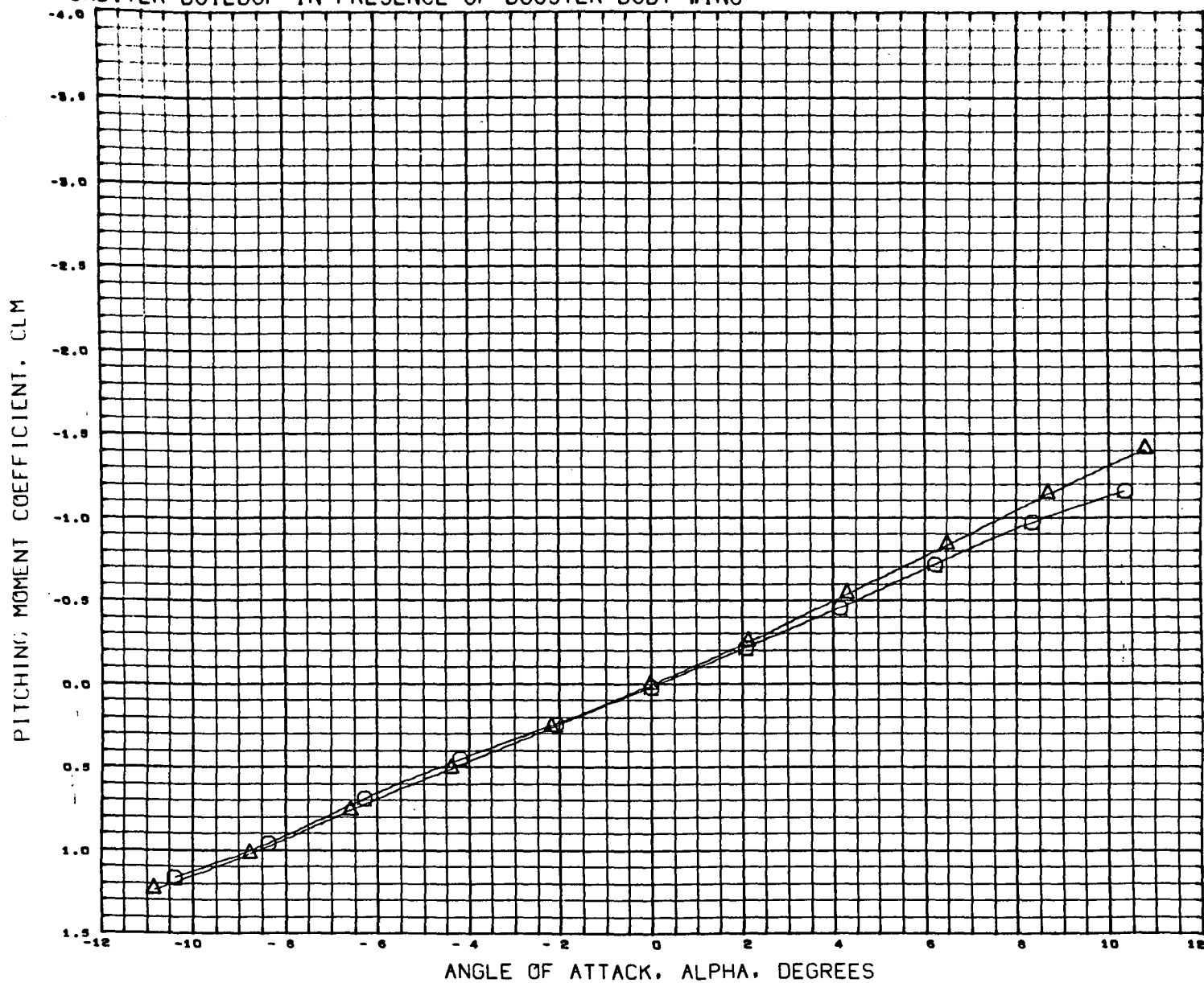
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 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

BETA ELVATR ELVORB POSITN
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 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6360 SQ IN
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 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0039 SCALE

MACH 1.939

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H3209A) MSFC490 NR/GD LAUNCH B20W14+B5

(H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

BETA ELVATR ELVORB POSITN

0.000 0.000 1.000

0.000 0.000 1.000

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0990 INCHES

BREF 6.0990 INCHES

XMRP 0.0000

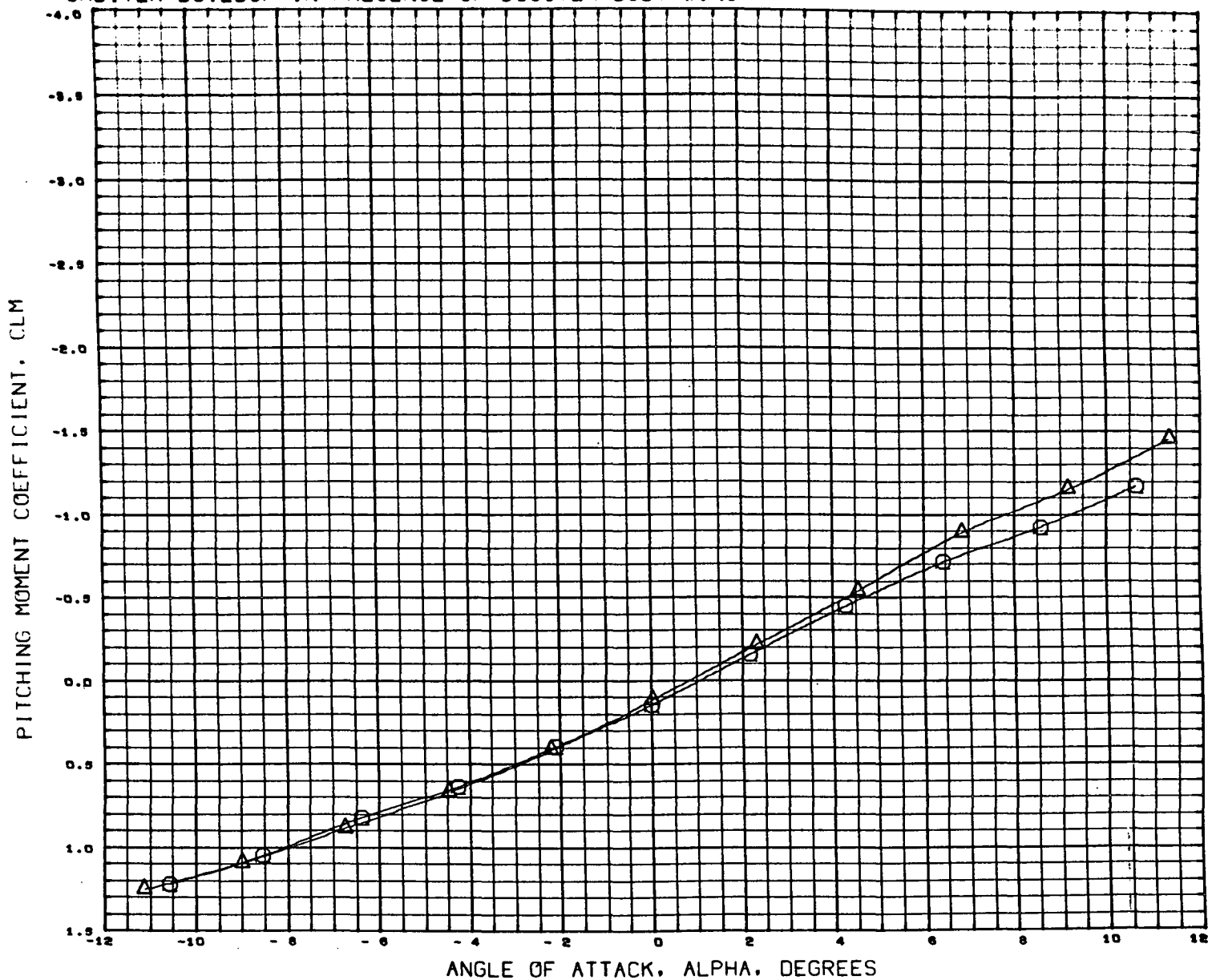
YMRP 0.0000

ZMRP 0.0000

SCALE 0.0035 SCALE

MACH 0.001

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



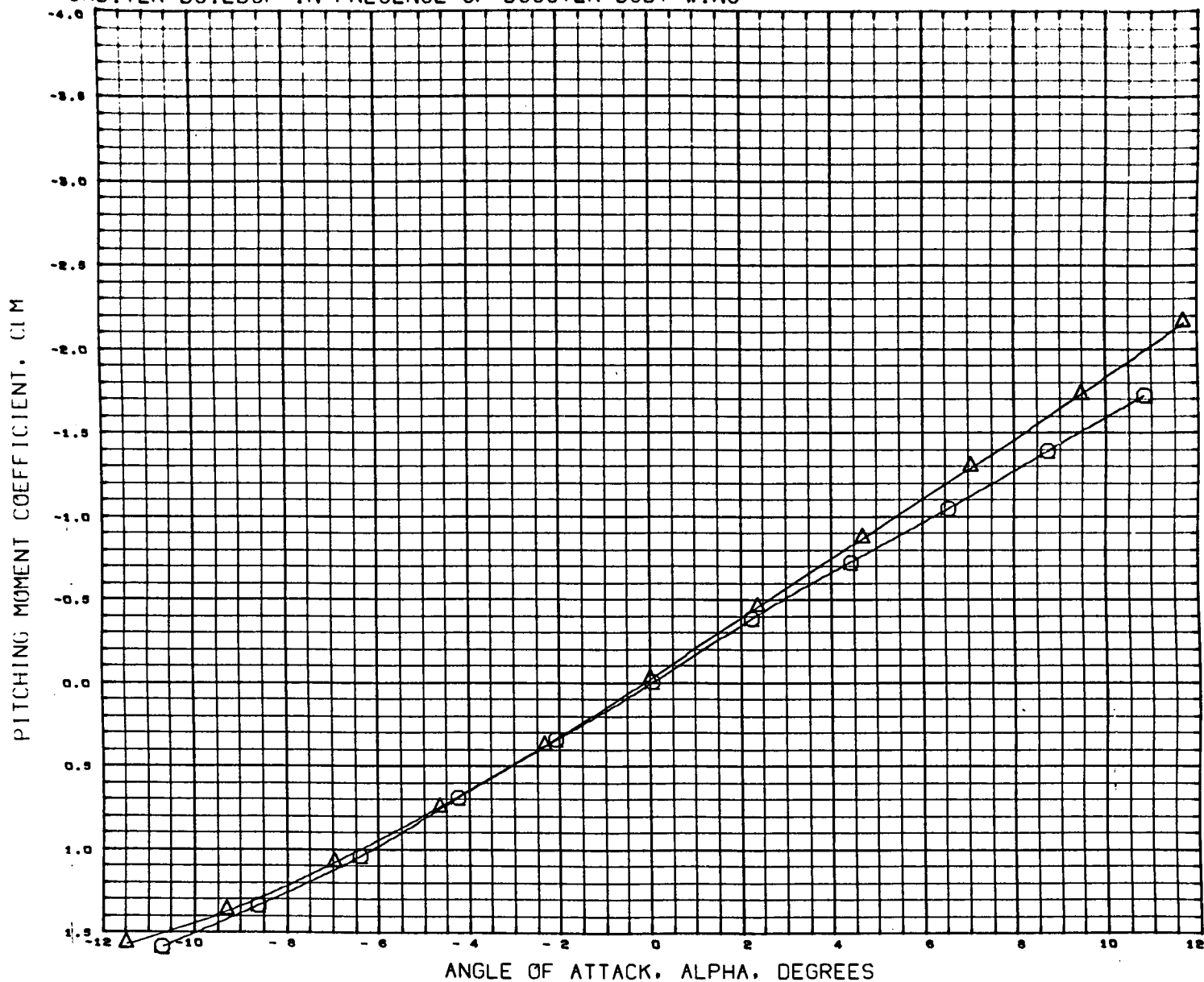
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| BETA | ELVATR | ELVORB | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.899

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

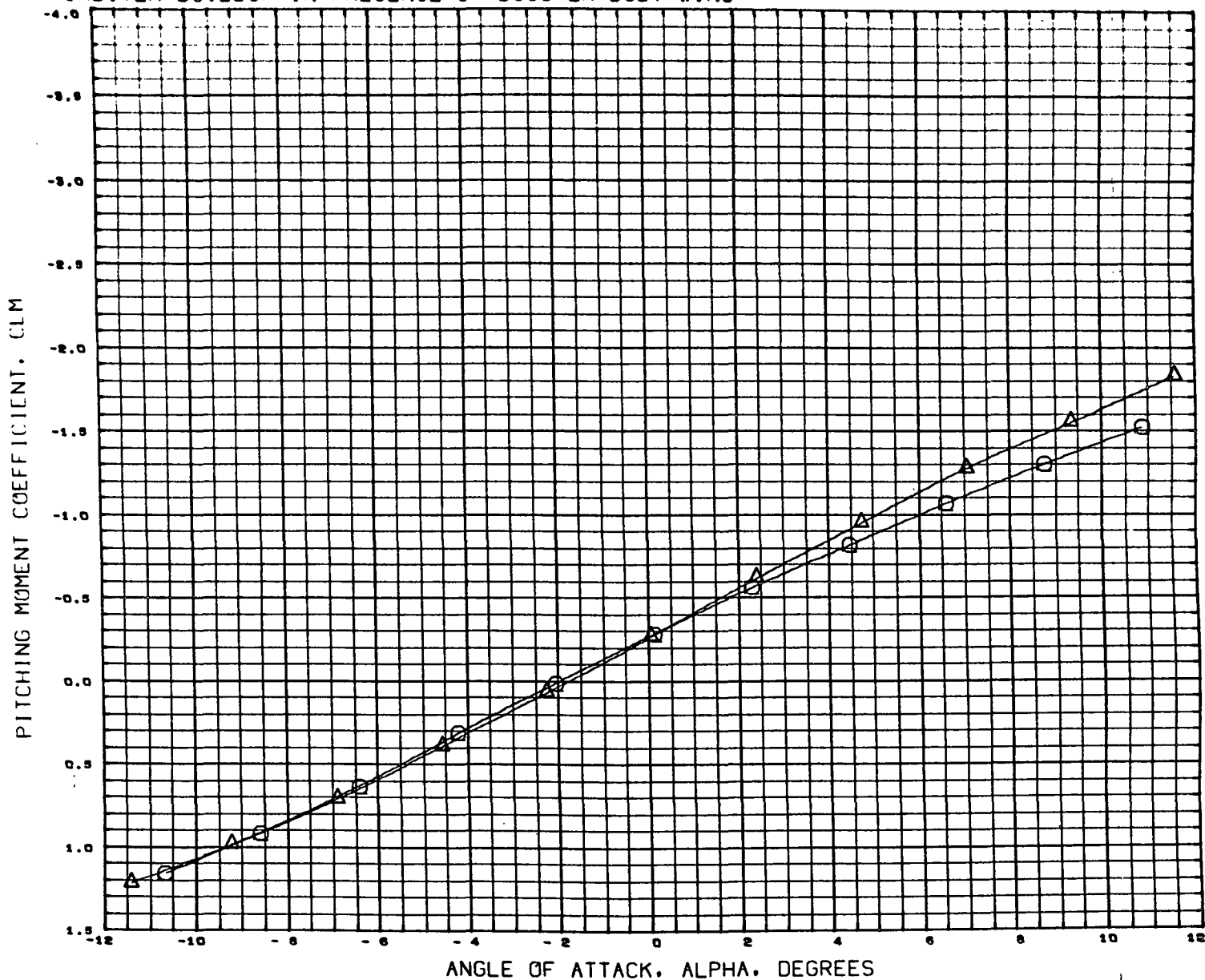


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|--------|
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| 0.000 | 0.000 | 1.000 | LREF | 3.0950 | INCHES |
| | | | BREF | 6.0990 | INCHES |
| | | | XMRP | 0.0000 | |
| | | | YMRP | 0.0000 | |
| | | | ZMRP | 0.0000 | |
| | | | SCALE | 0.0035 | SCALE |

MACH 1.095

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



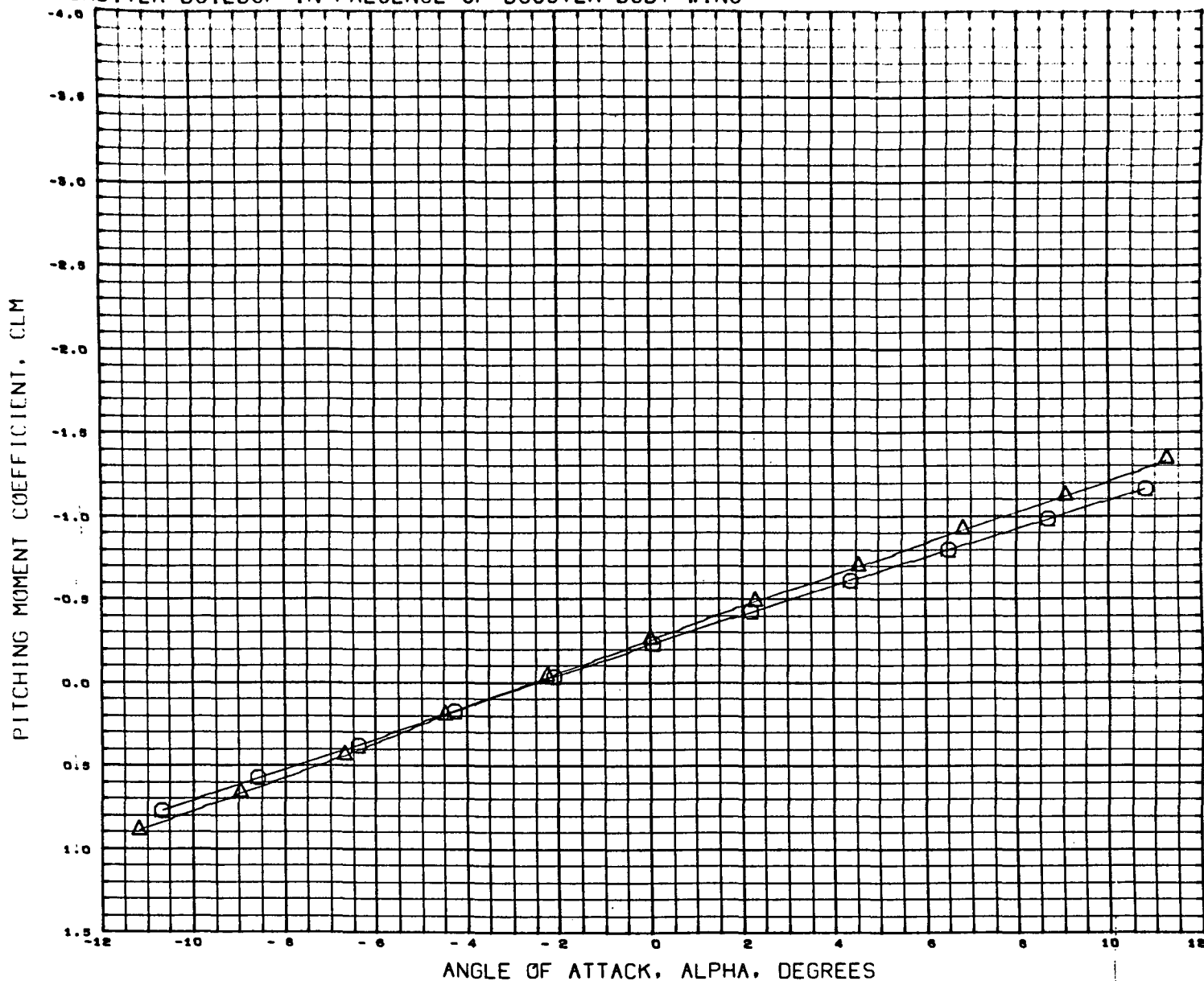
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BETA ELVATR ELVORB POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
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 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.468

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

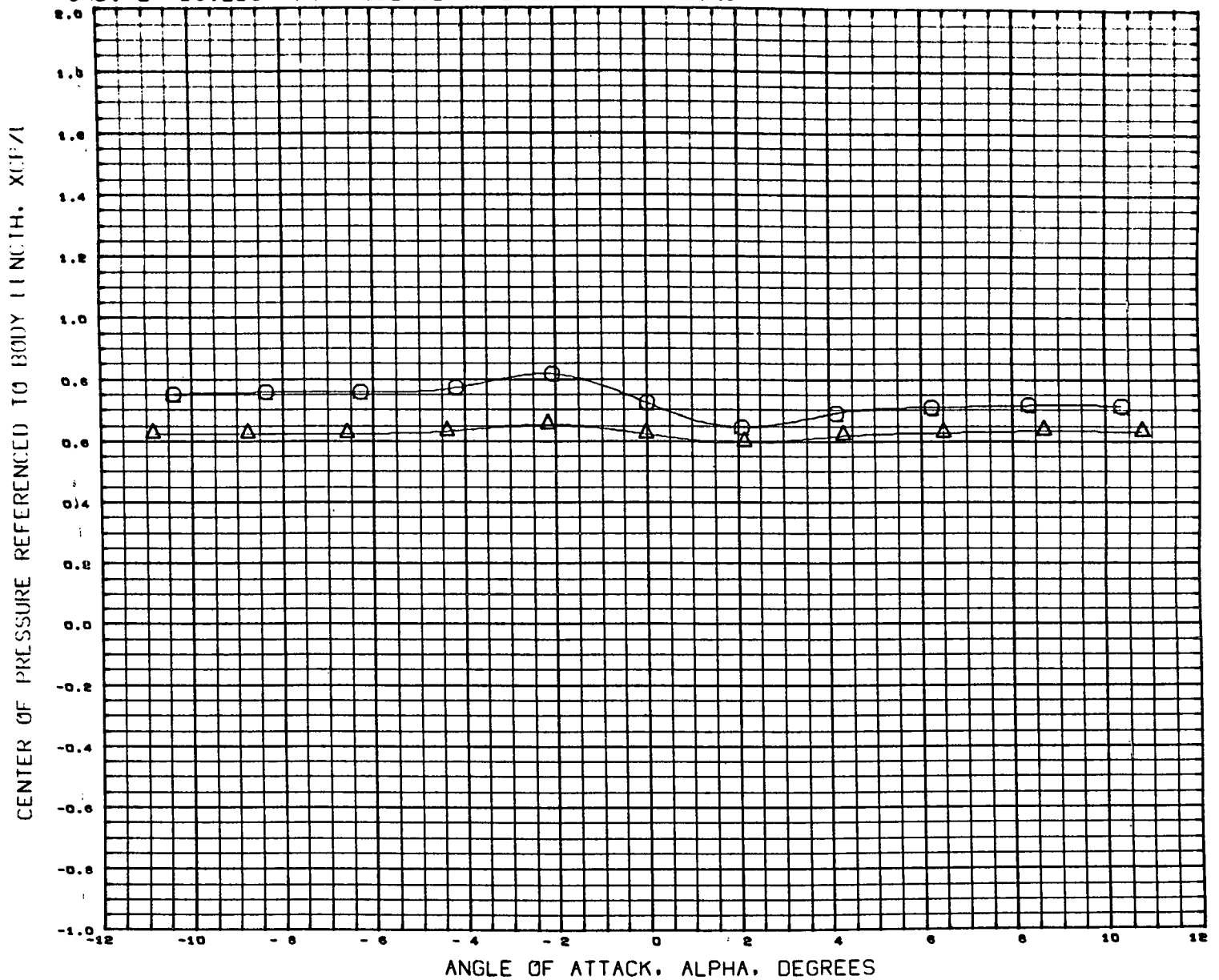


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0950 INCHES |
| | | | | BREF 0.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
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| | | | | SCALE 0.0035 SCALE |

MACH 1.959

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



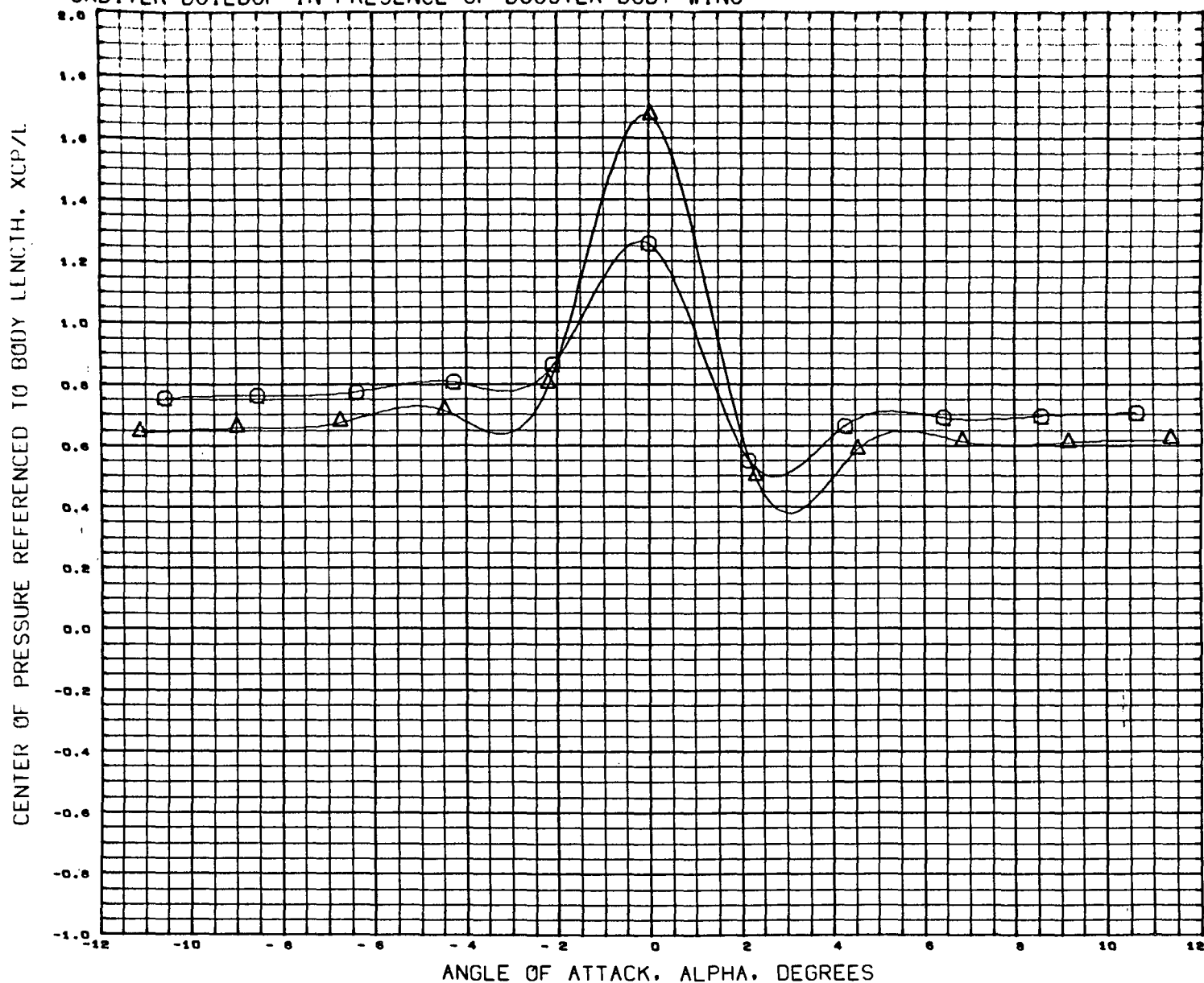
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

BETA ELVATR ELVORB POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0930 INCHES
 BREF 6.0990 INCHES
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 SCALE 0.0035 SCALE

MACH 0.601

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



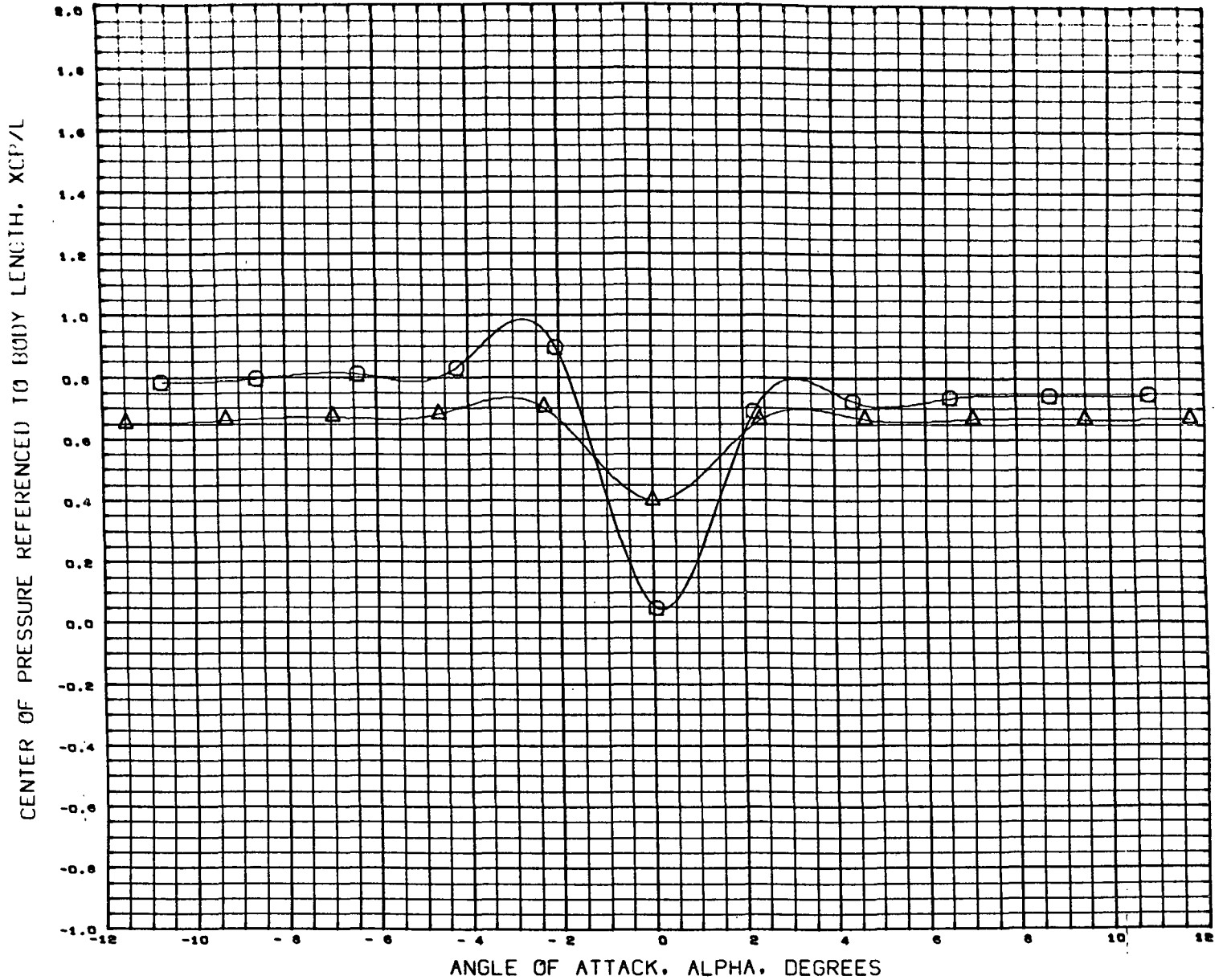
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 (H3210A) MSFC490 NR/GD LAUNCH B2DW14+B5W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0930 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRR | 0.0000 |
| | | | | YMRR | 0.0000 |
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| | | | | SCALE | 0.0035 SCALE |

MACH 0.899

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



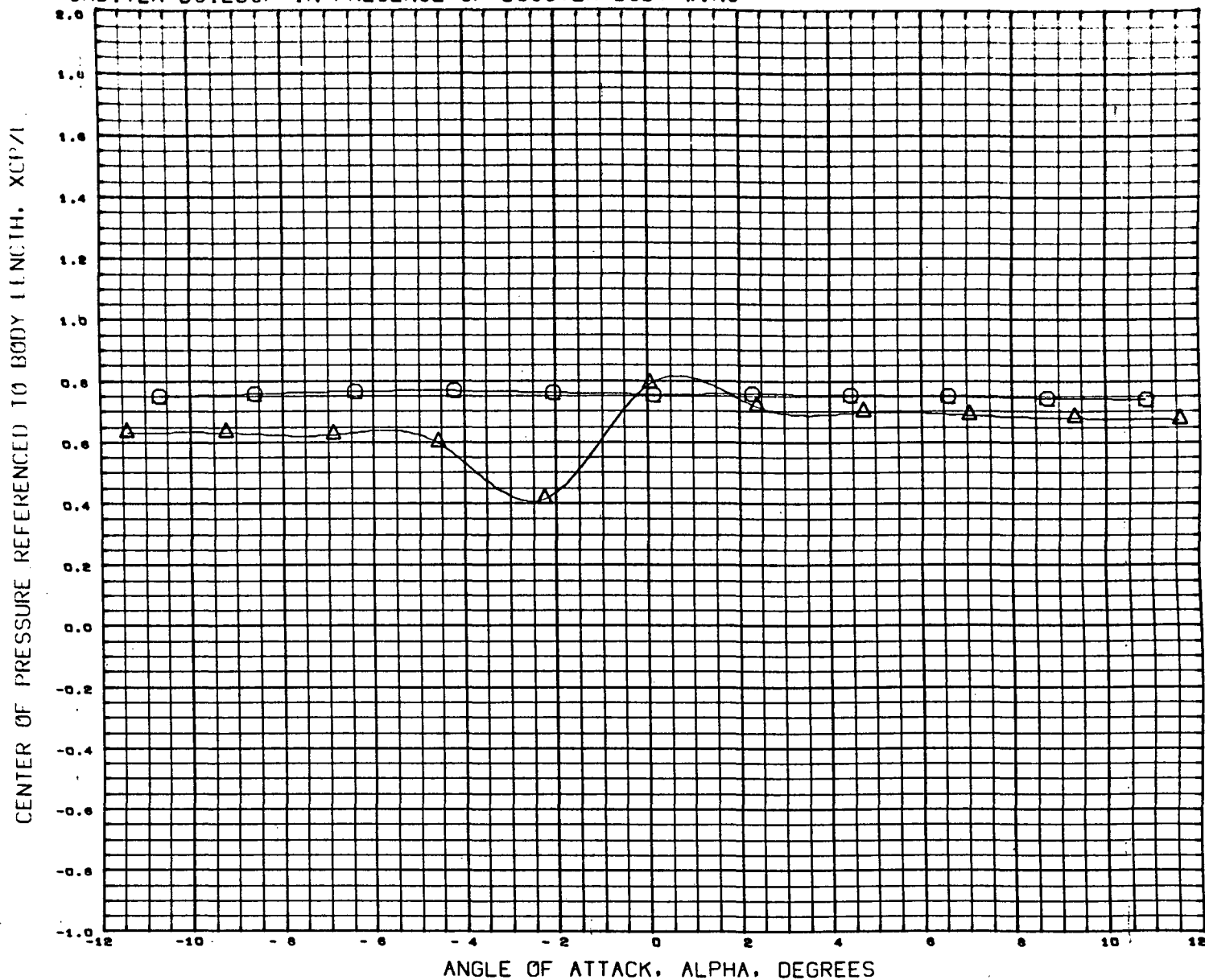
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 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

BETA ELVATR ELVORB POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
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 SCALE 0.0035 SCALE

MACH 1.095

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

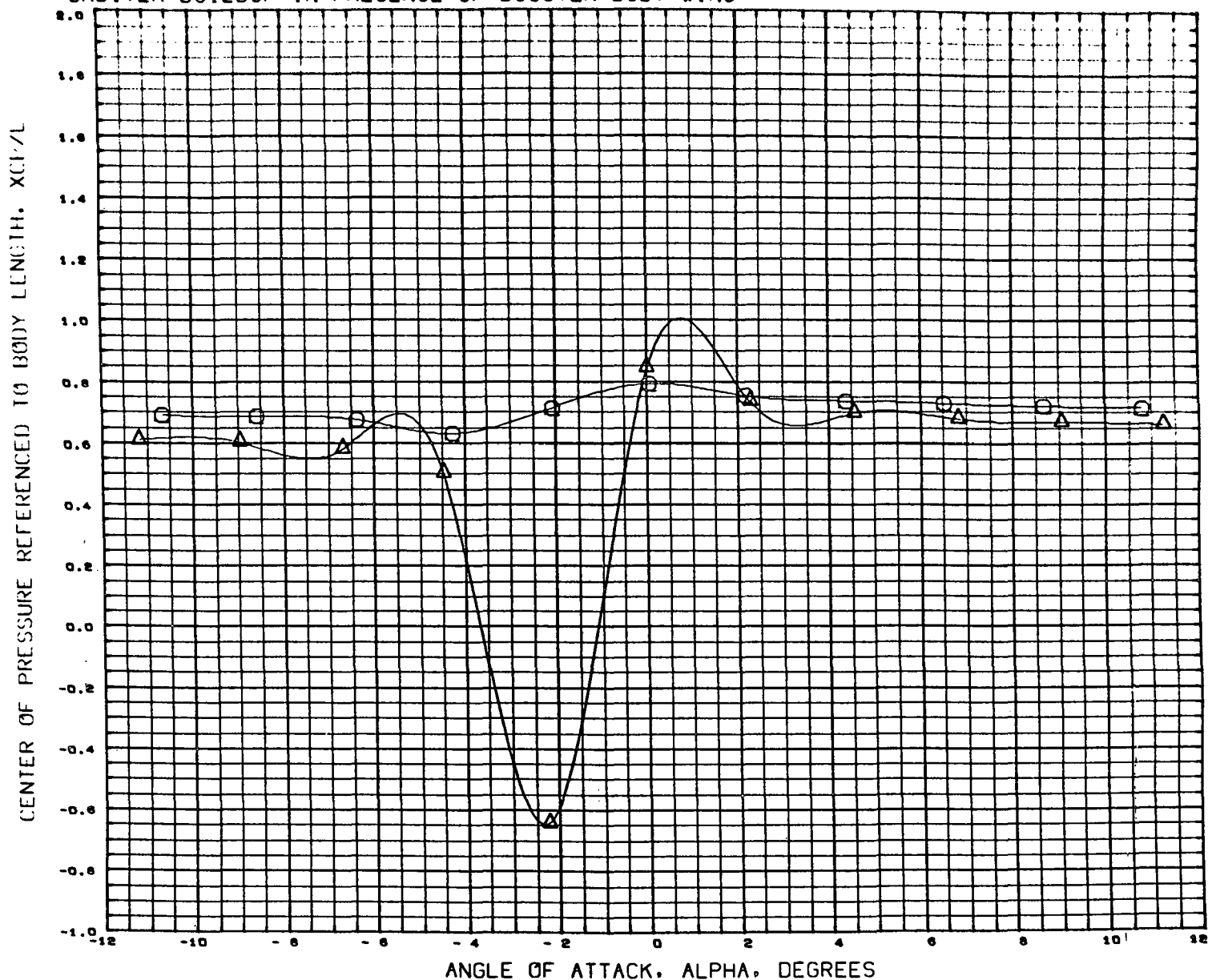


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 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.468

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



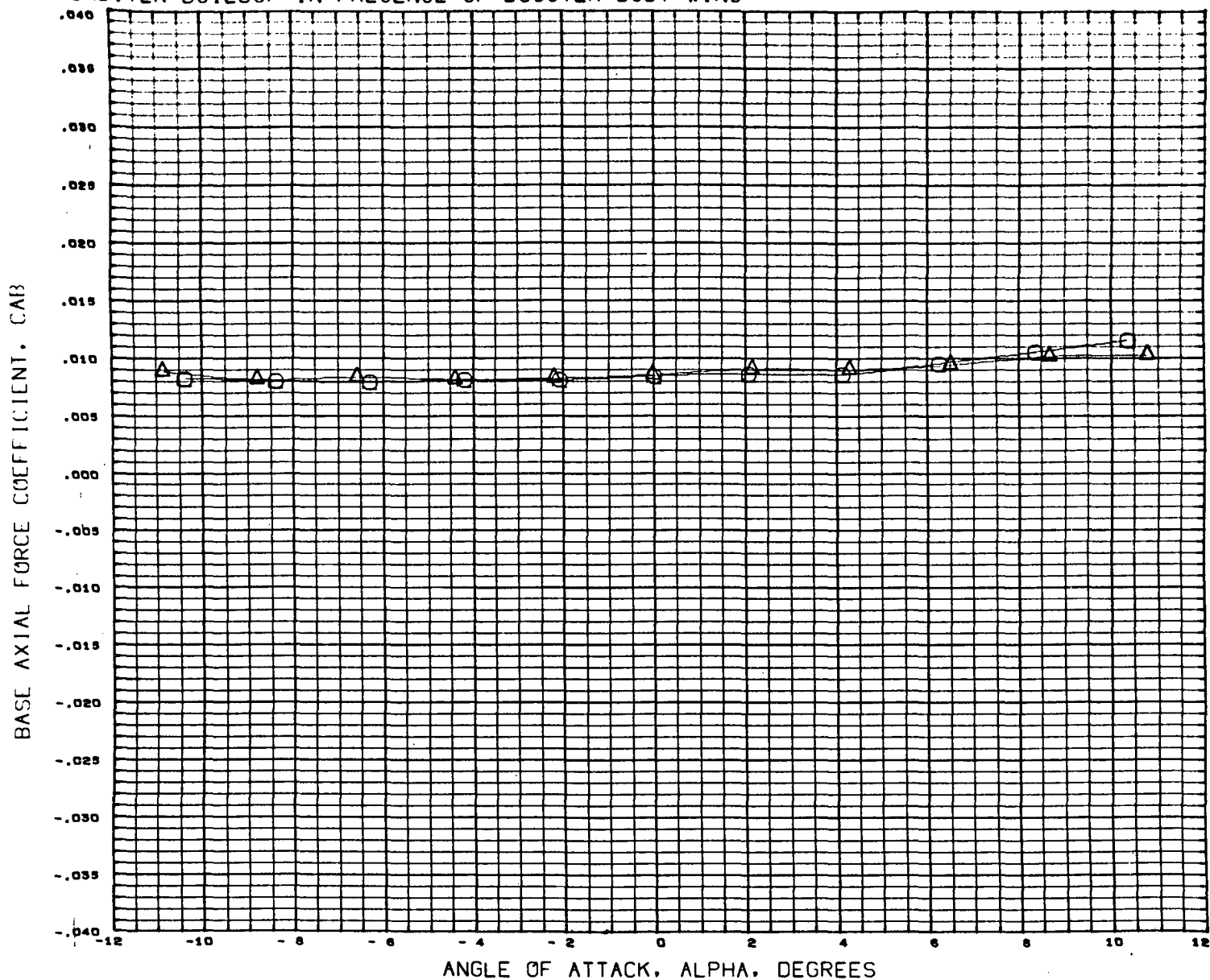
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
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| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| BETA | ELVATR | ELVORB | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | | 1.000 |
| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.959

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

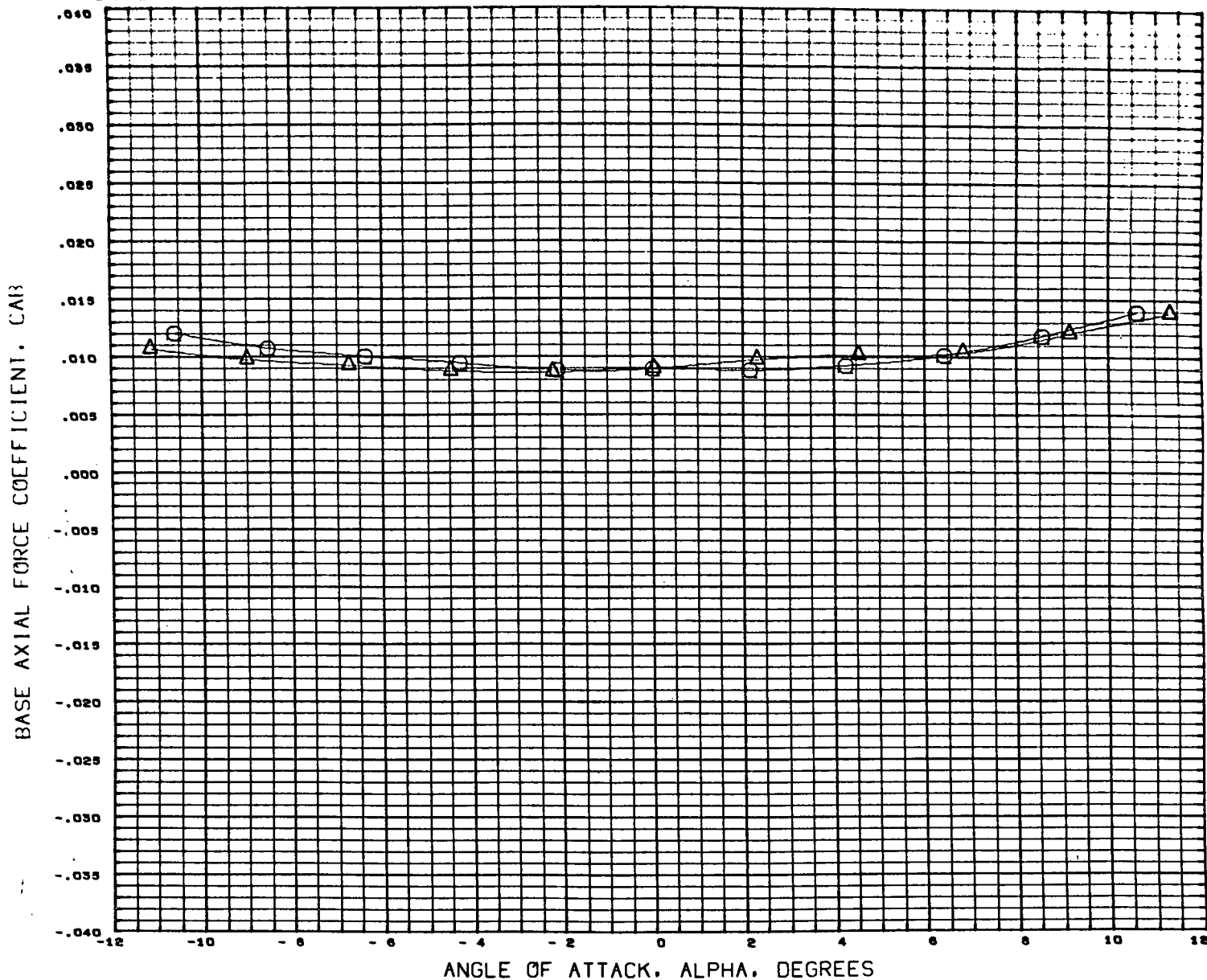


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) ○ MSFC490 NR/GD LAUNCH B20W14+B5
 (H3210A) △ MSFC490 NR/GD LAUNCH B20W14+B5W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6360 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRF | 0.0000 |
| | | | | YMRF | 0.0000 |
| | | | | ZMRF | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.601

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



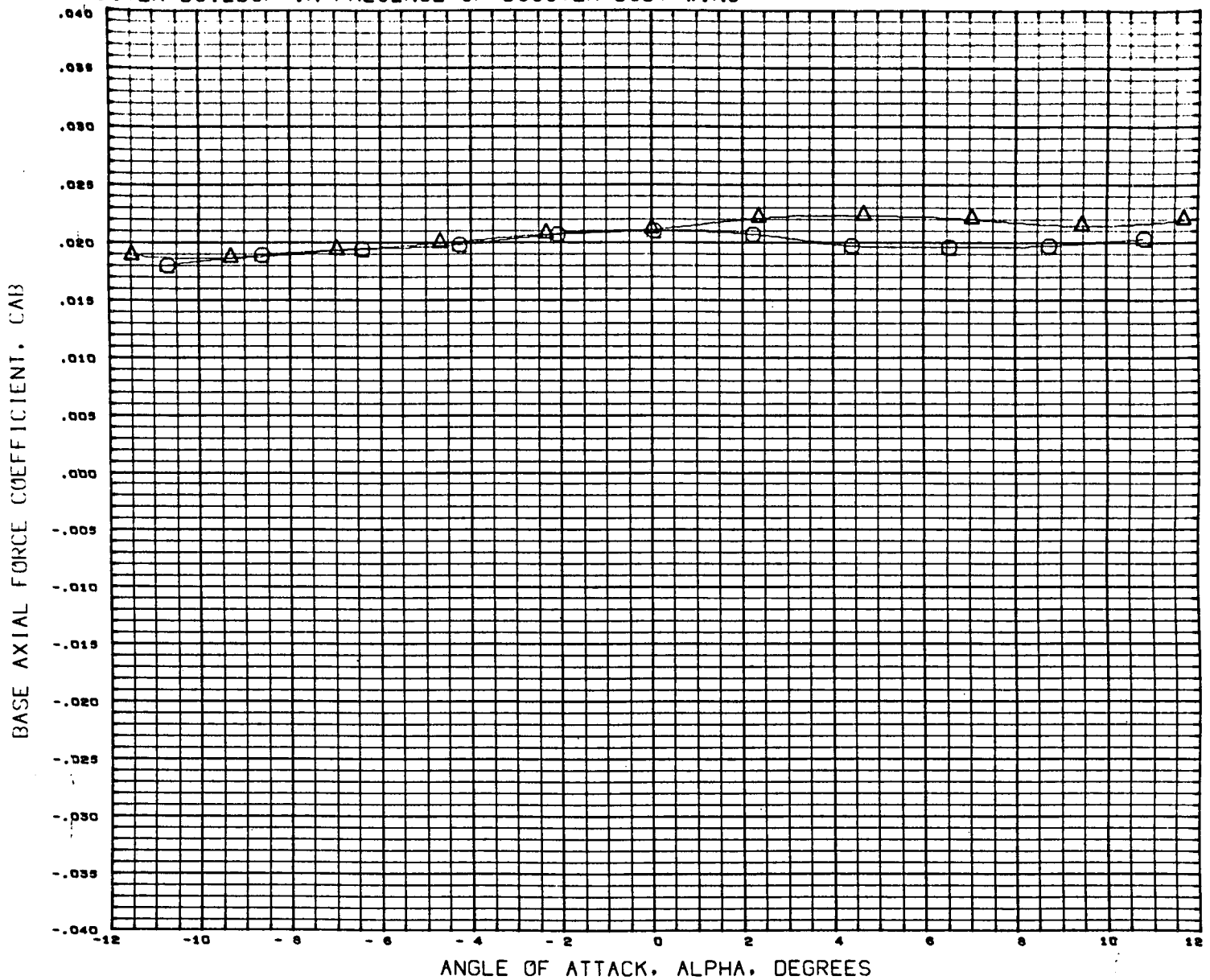
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

BETA ELVATR ELVORB POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
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 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.899

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

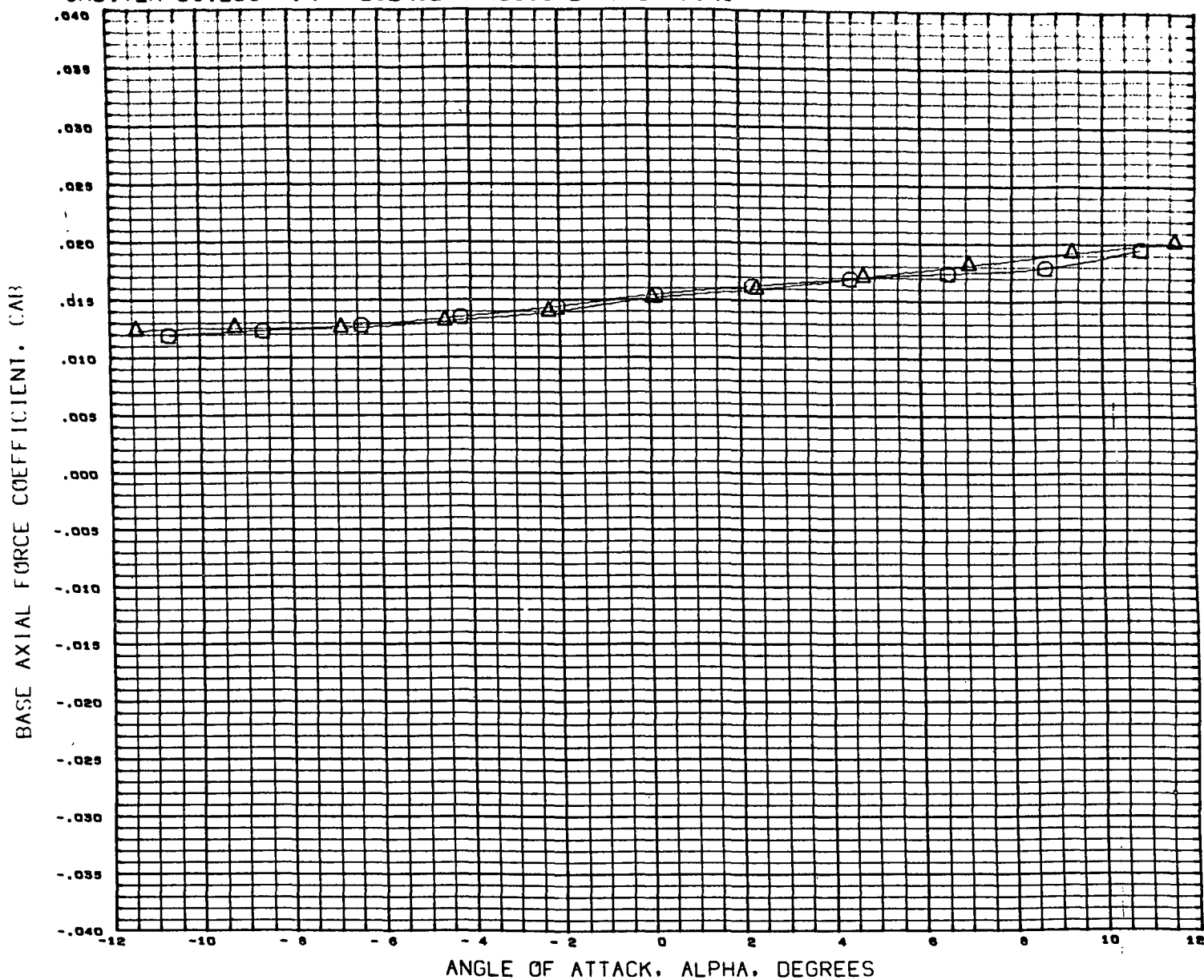


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.095

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

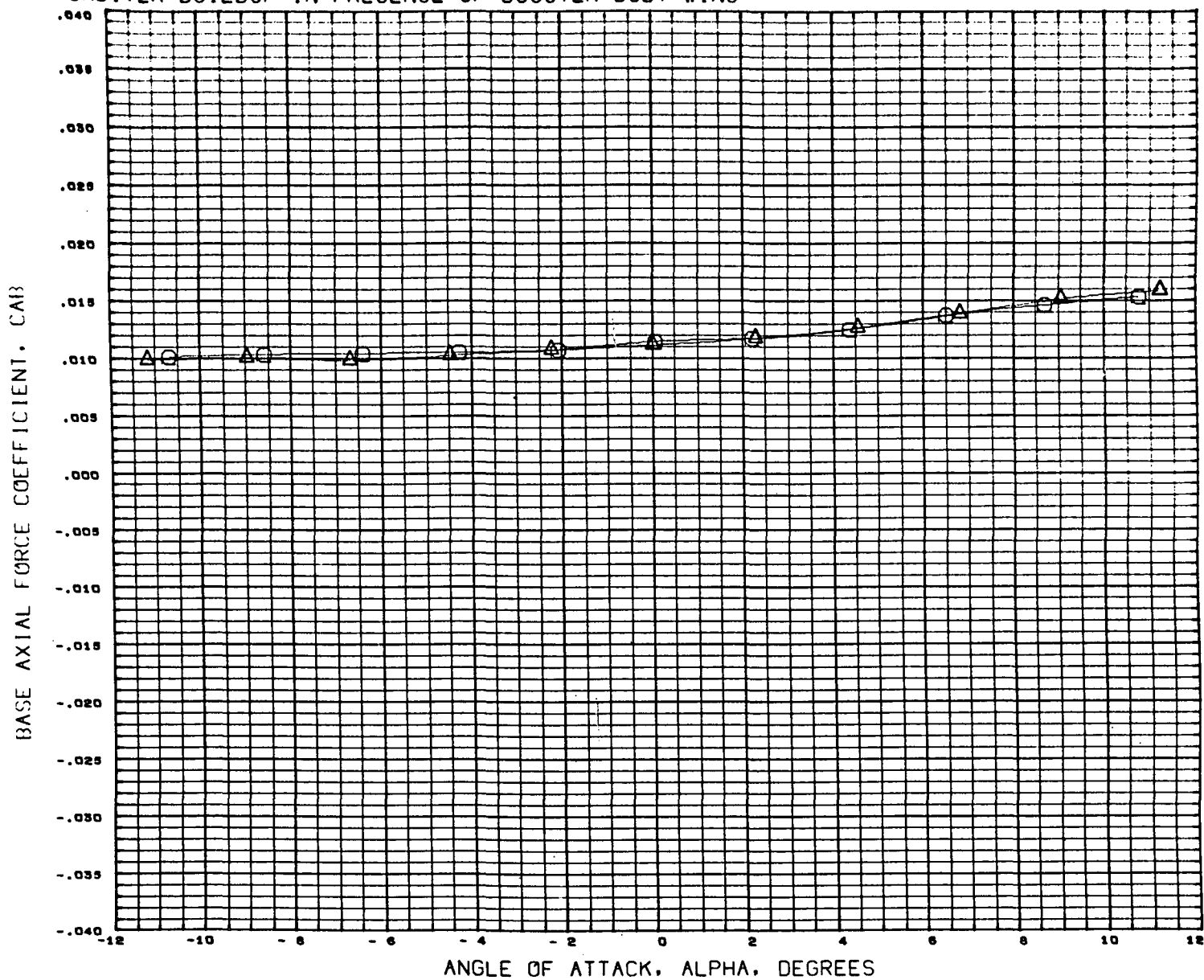


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0950 INCHES |
| | | | | BREF 0.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
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MACH 1.468

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



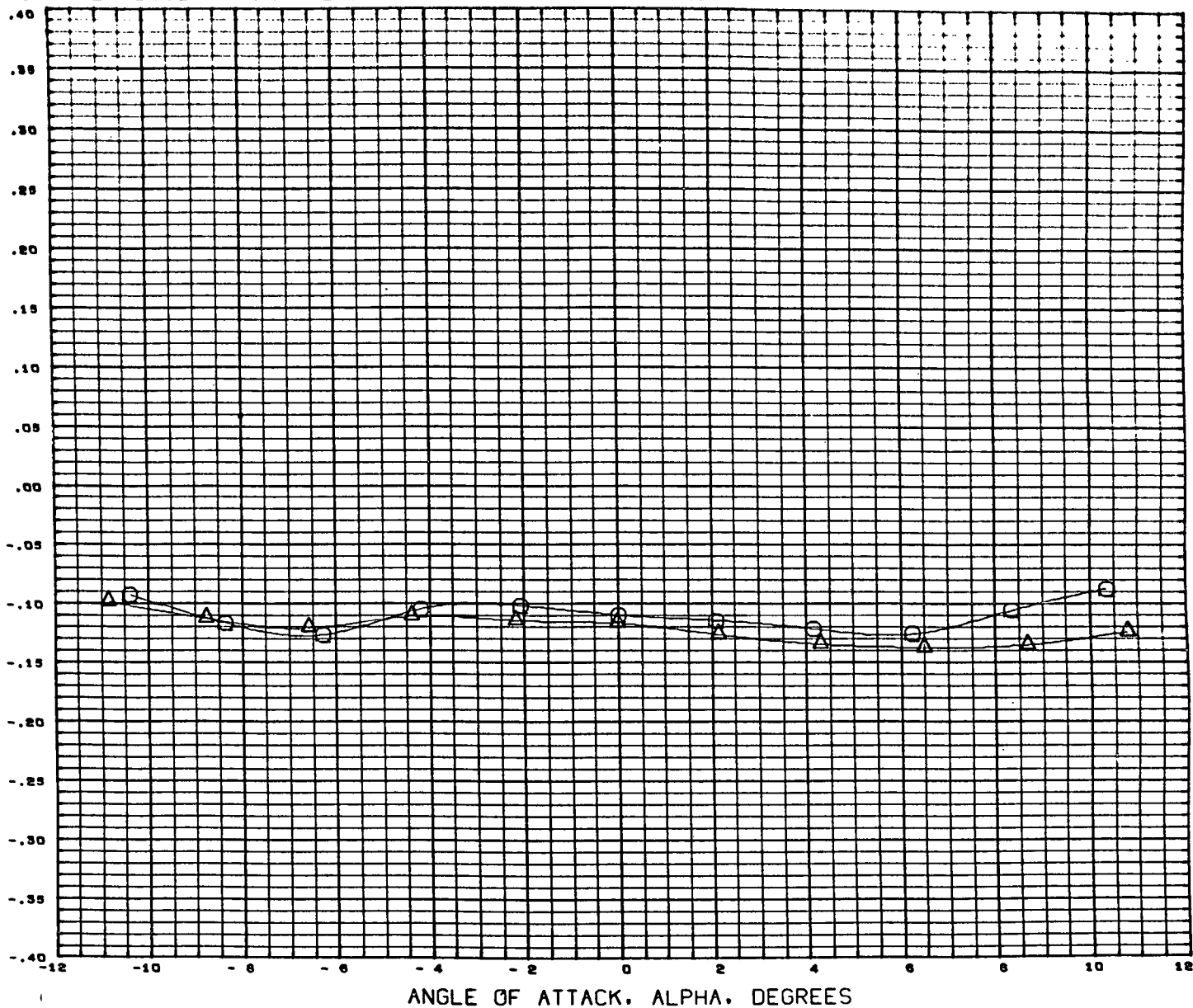
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.959

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM_{ALP} (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



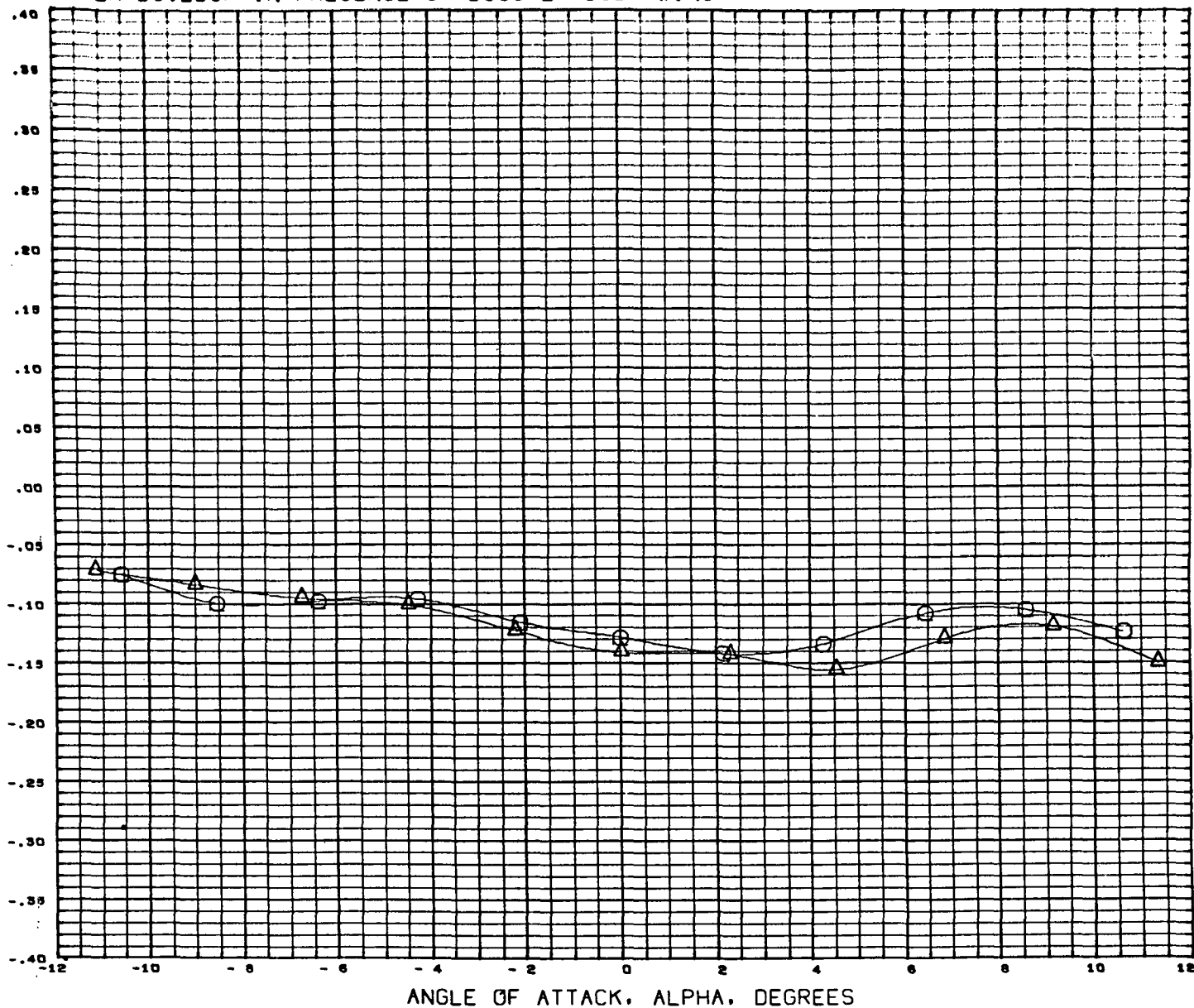
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (13210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 0.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.001

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMULATIVE PER DEGREE

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (13210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

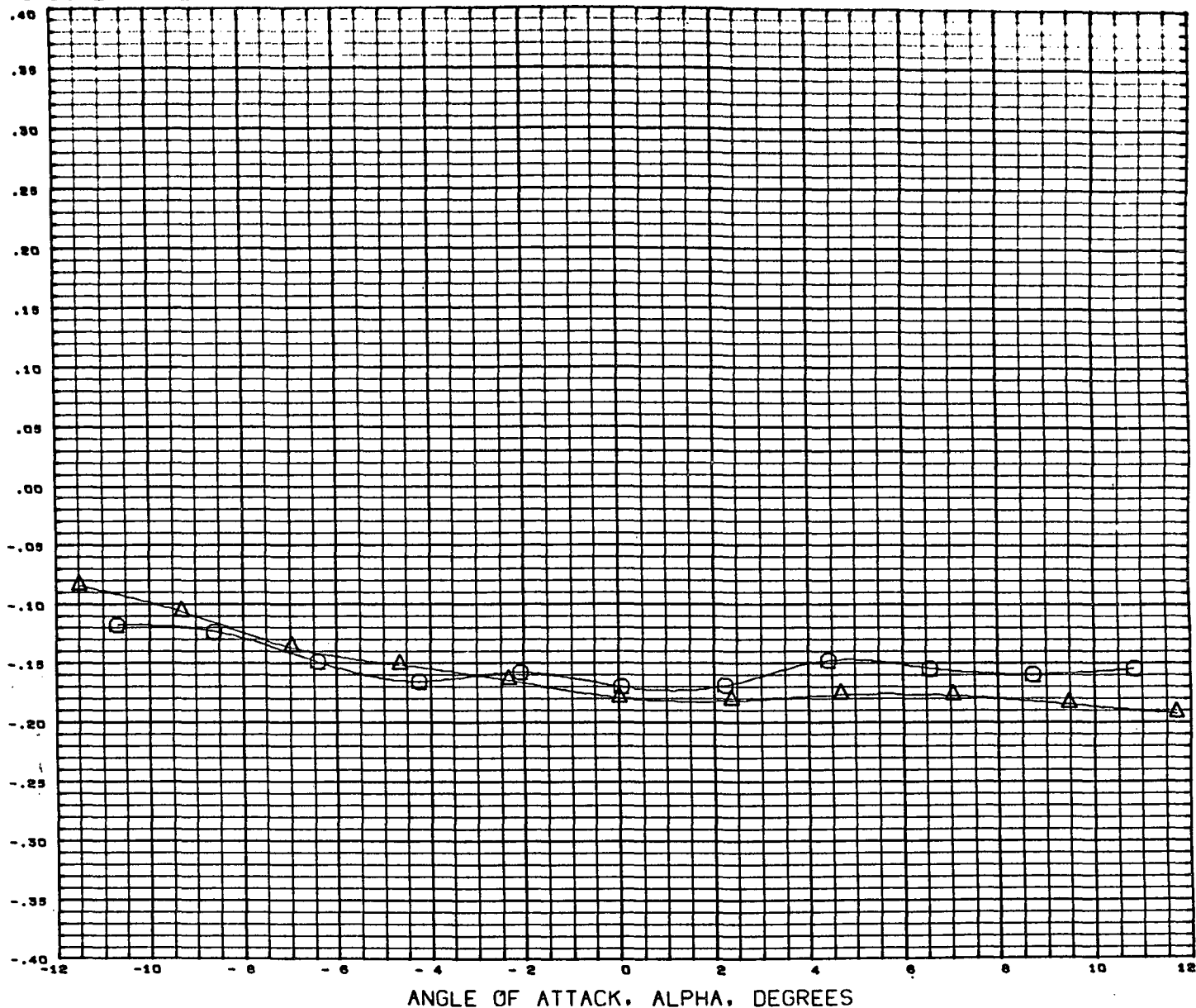
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REFERENCE INFORMATION
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 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0033 SCALE

MACH 0.899

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM_{ALP} (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



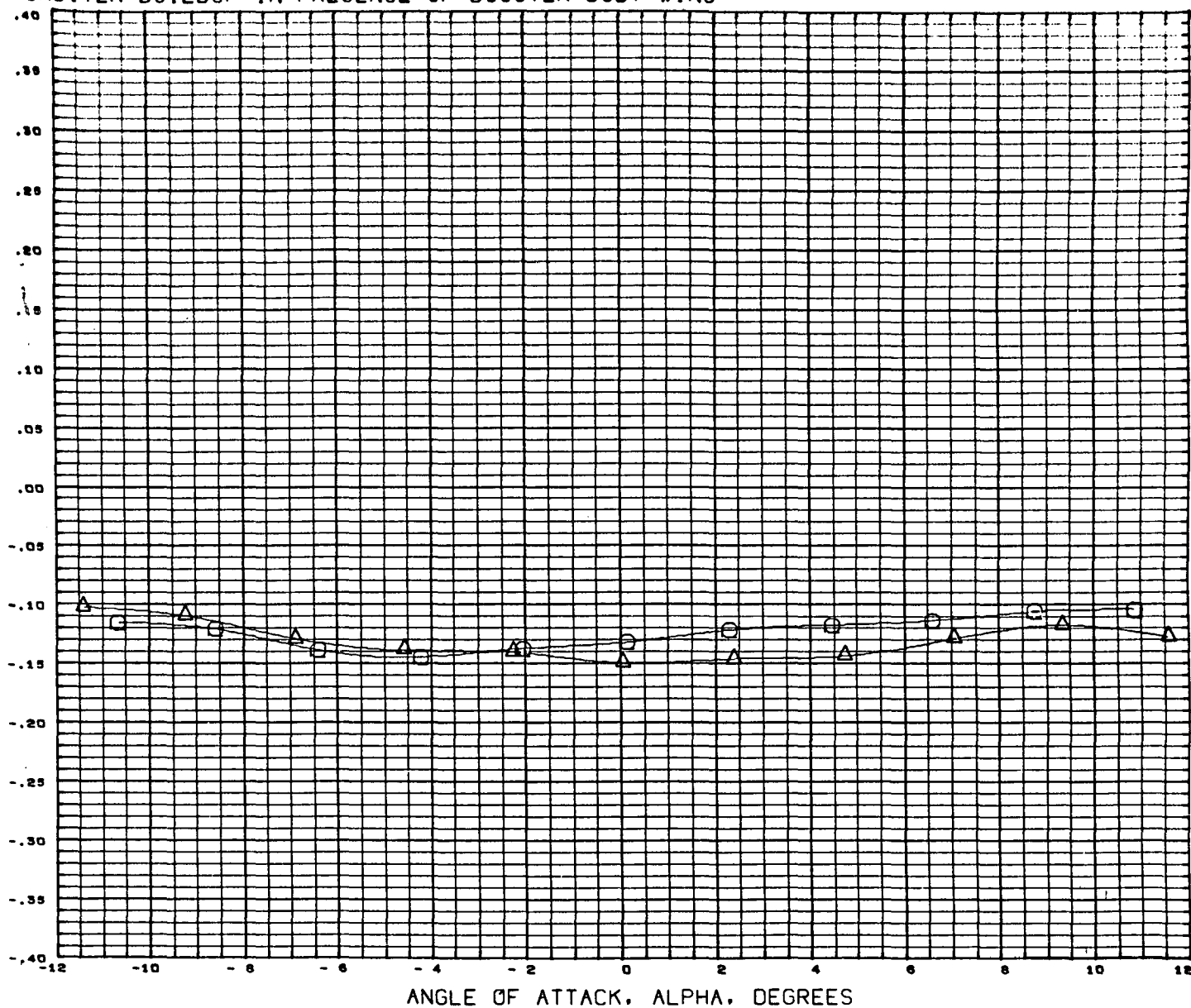
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| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0039 SCALE |

MACH 1.095

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMALP (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
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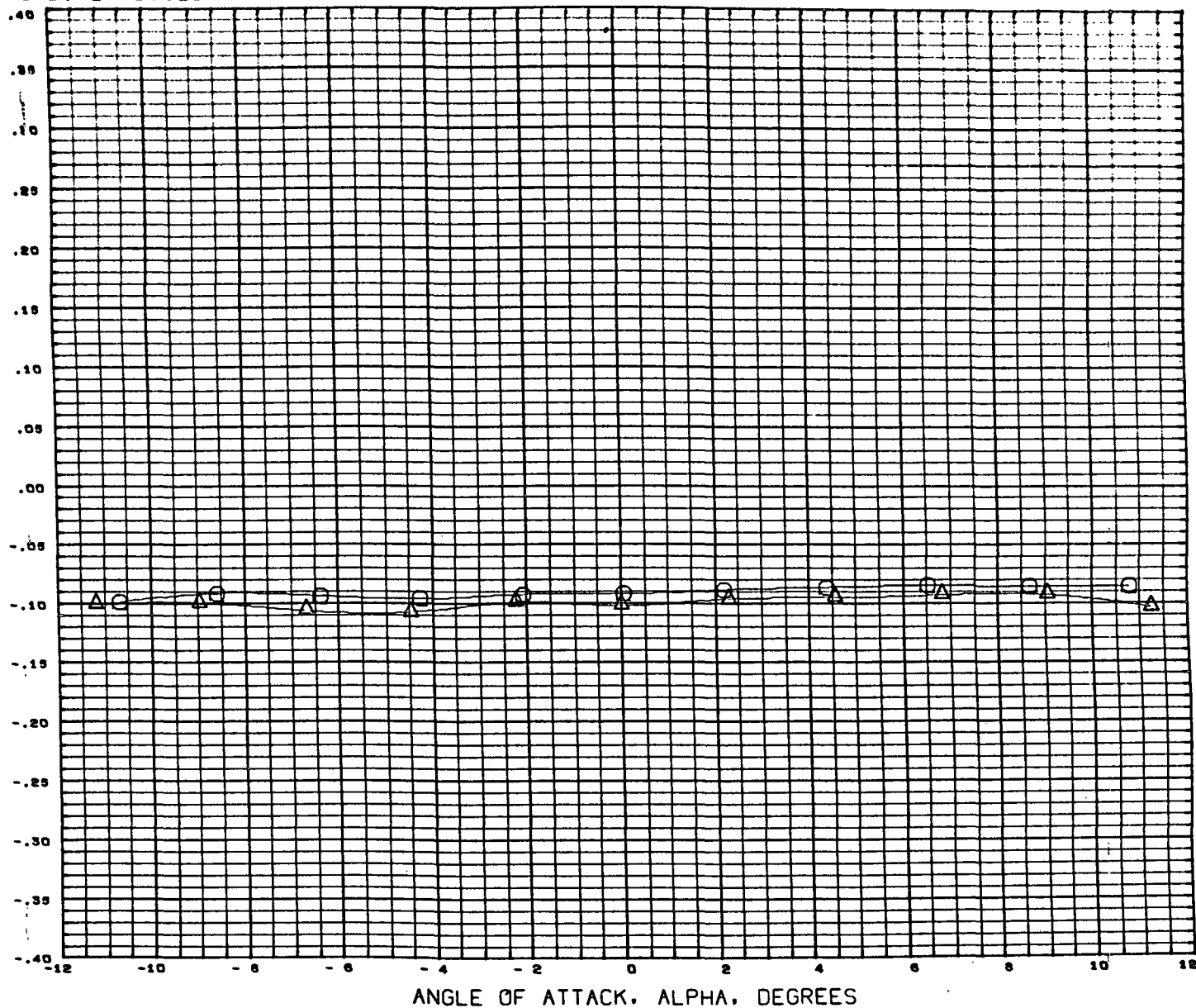
| BETA | ELVATR | ELVORB | POSITN |
|-------|--------|--------|--------|
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| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.466

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - (CMALP (PER DEGREE))

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (13210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

BETA ELVATR ELVORB POSITN
 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.959

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNAIPH (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



ANGLE OF ATTACK, ALPHA, DEGREES

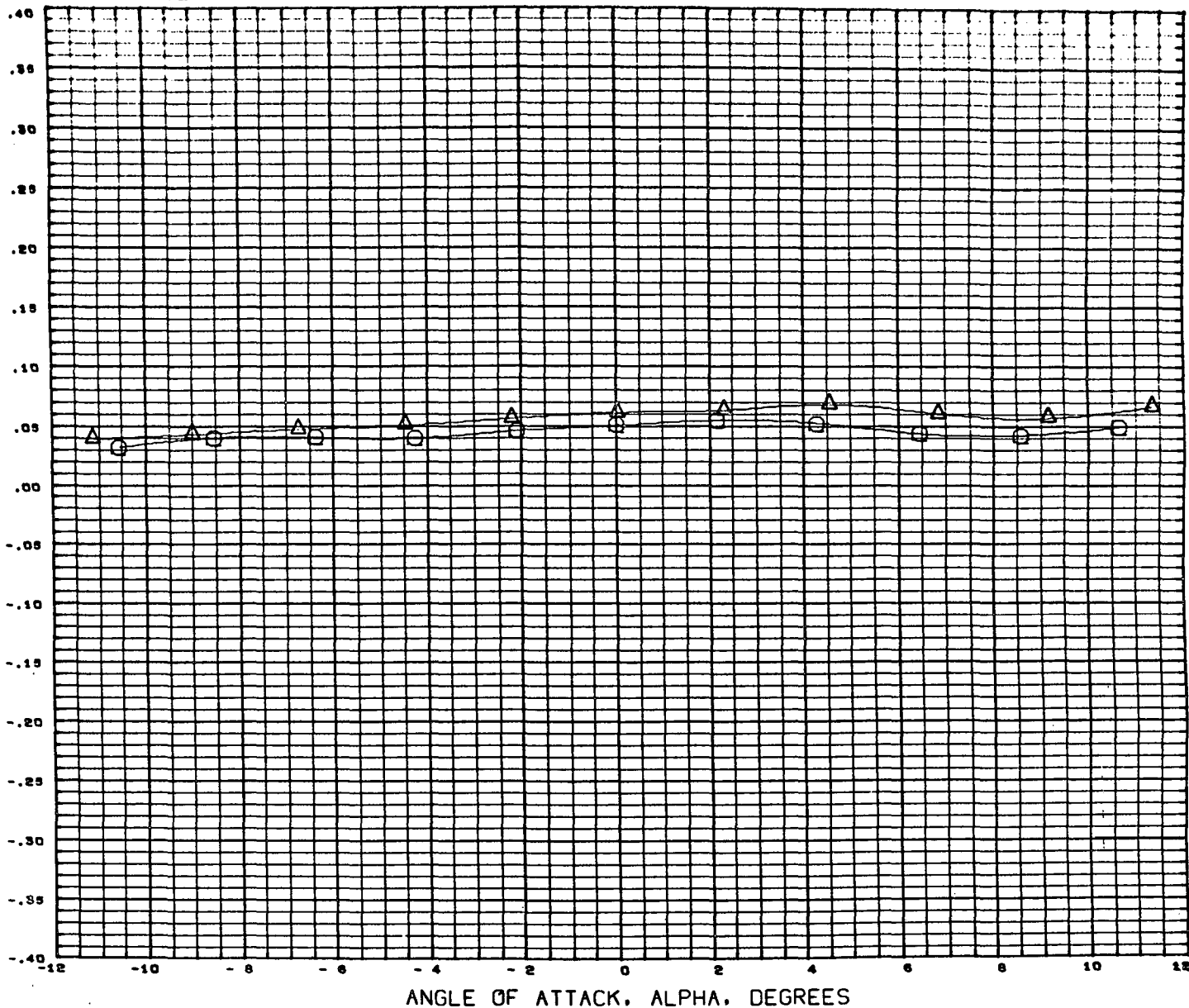
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
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| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 0.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.601

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



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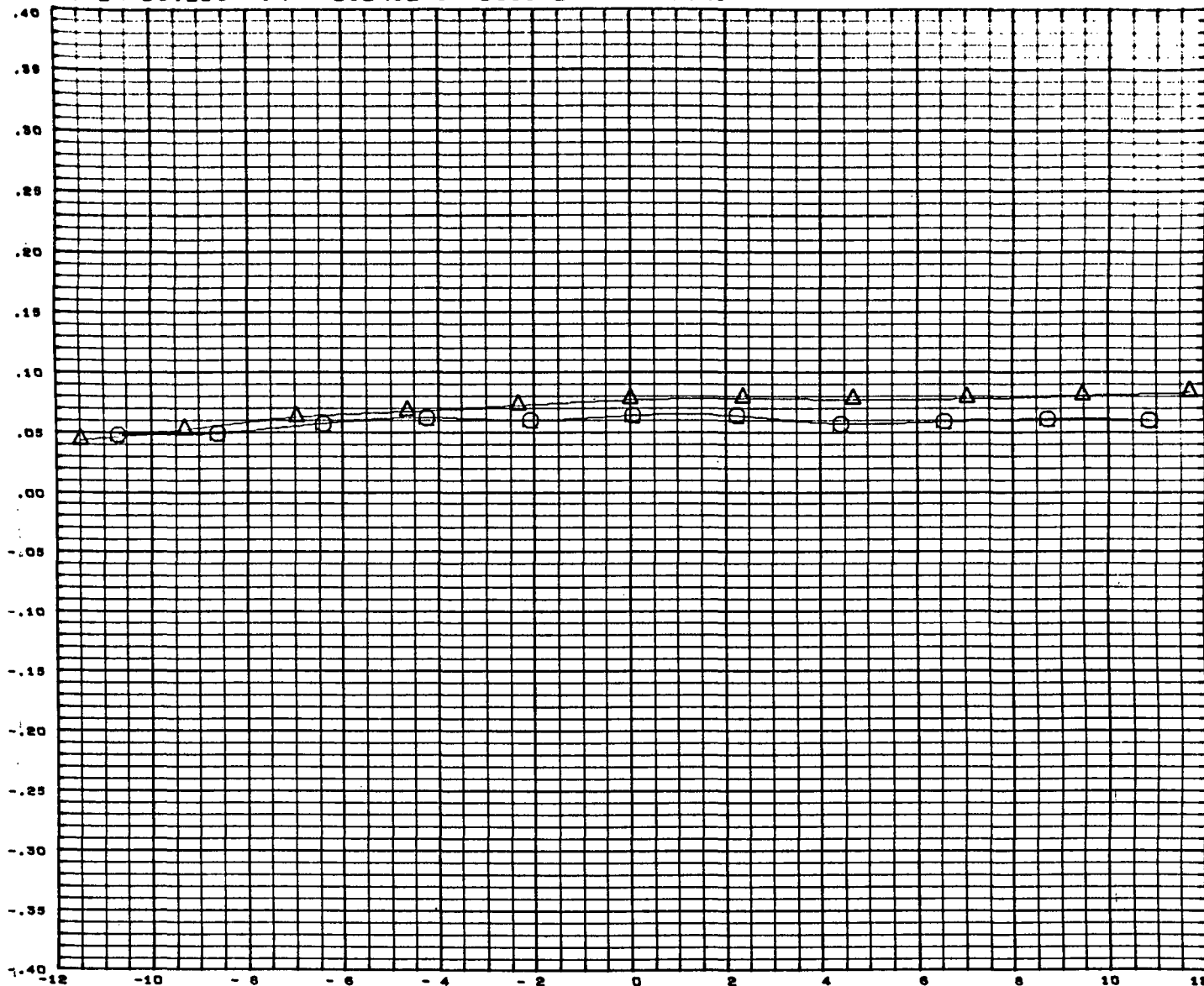
BETA ELVATR ELVORB POSITN
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 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0890 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.899

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNAIPH (PER DEGREE)



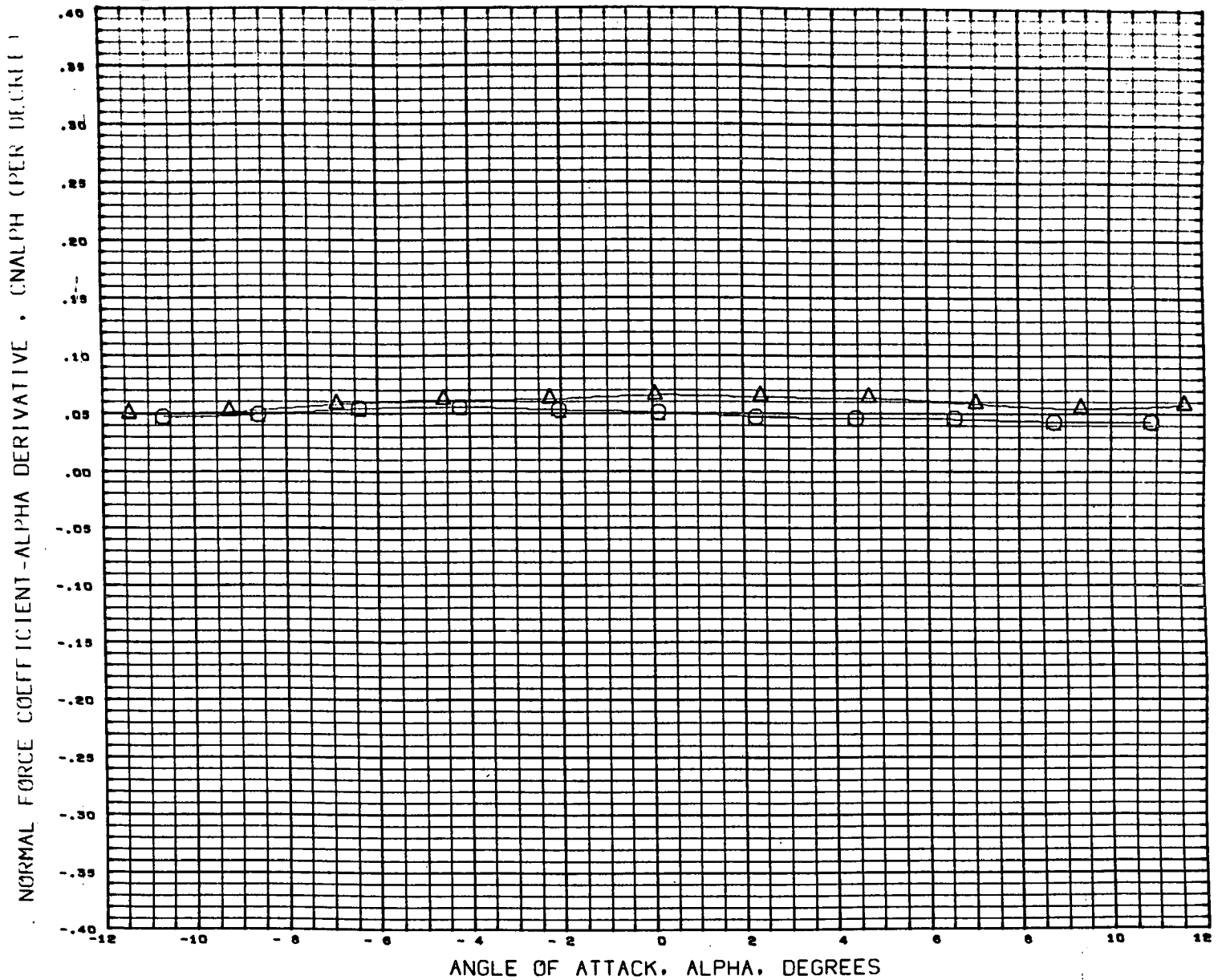
ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (13210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.095

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (13210A) △ MSFC490 NR/GD LAUNCH B20W14+B5W17

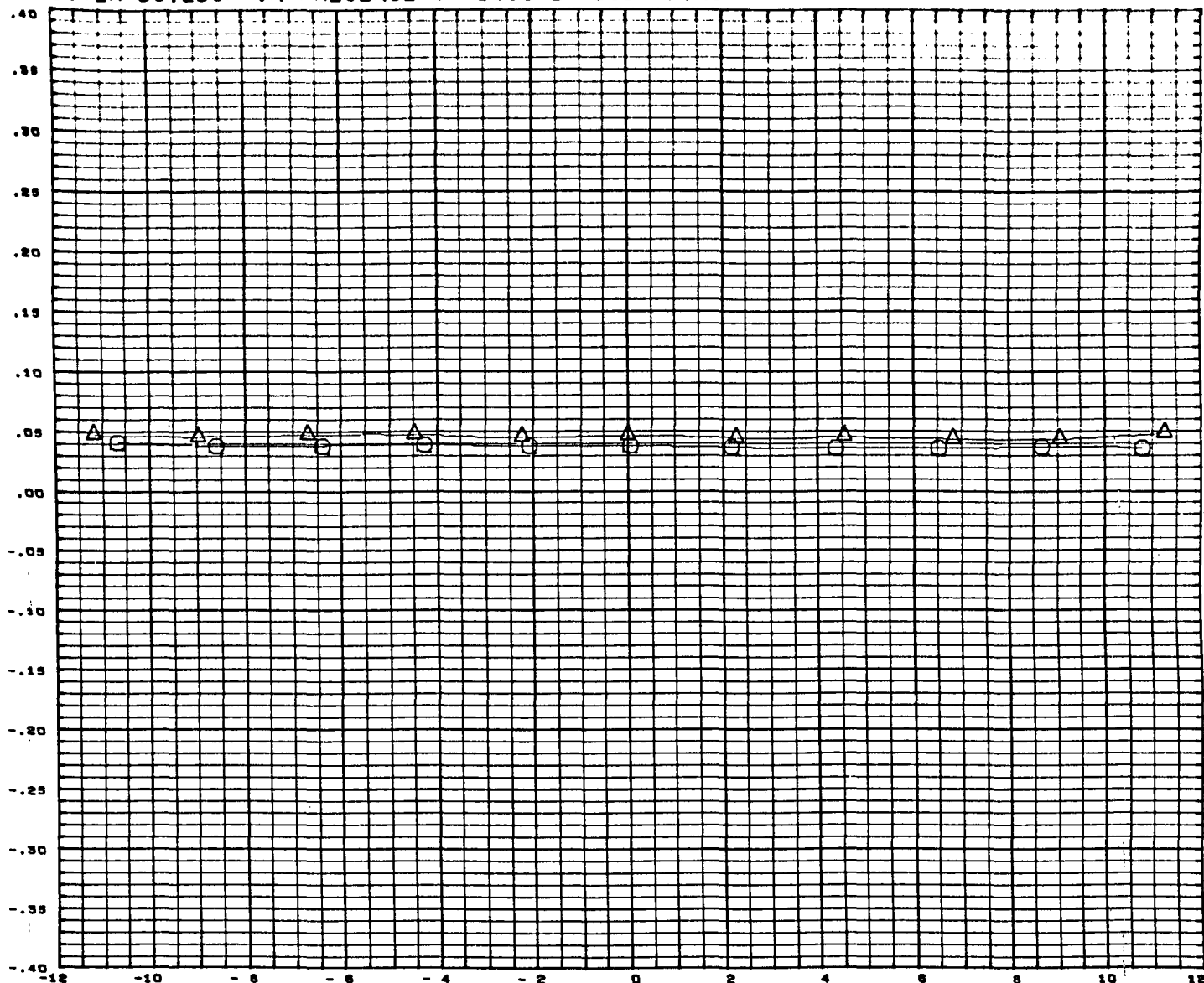
BETA ELVATR ELVORB POSITN
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 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
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 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.468

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - (N/ALPH (PER DEGREE))



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| BETA | ELVATR | ELVORB | POSITN |
|-------|--------|--------|--------|
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| 0.000 | 0.000 | 0.000 | 1.000 |

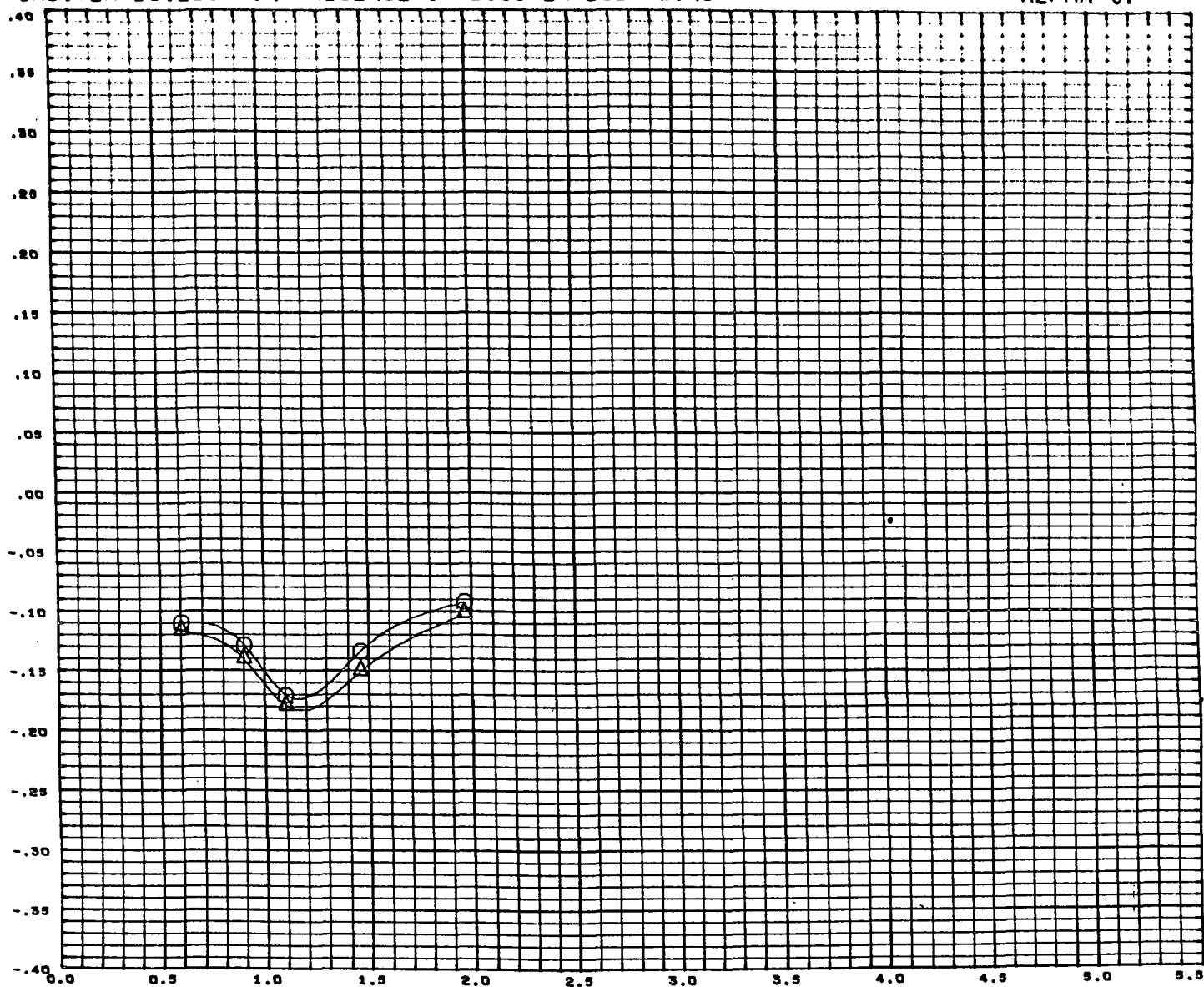
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| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.959

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAMP (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

ALPHA=0.



MACH NUMBER

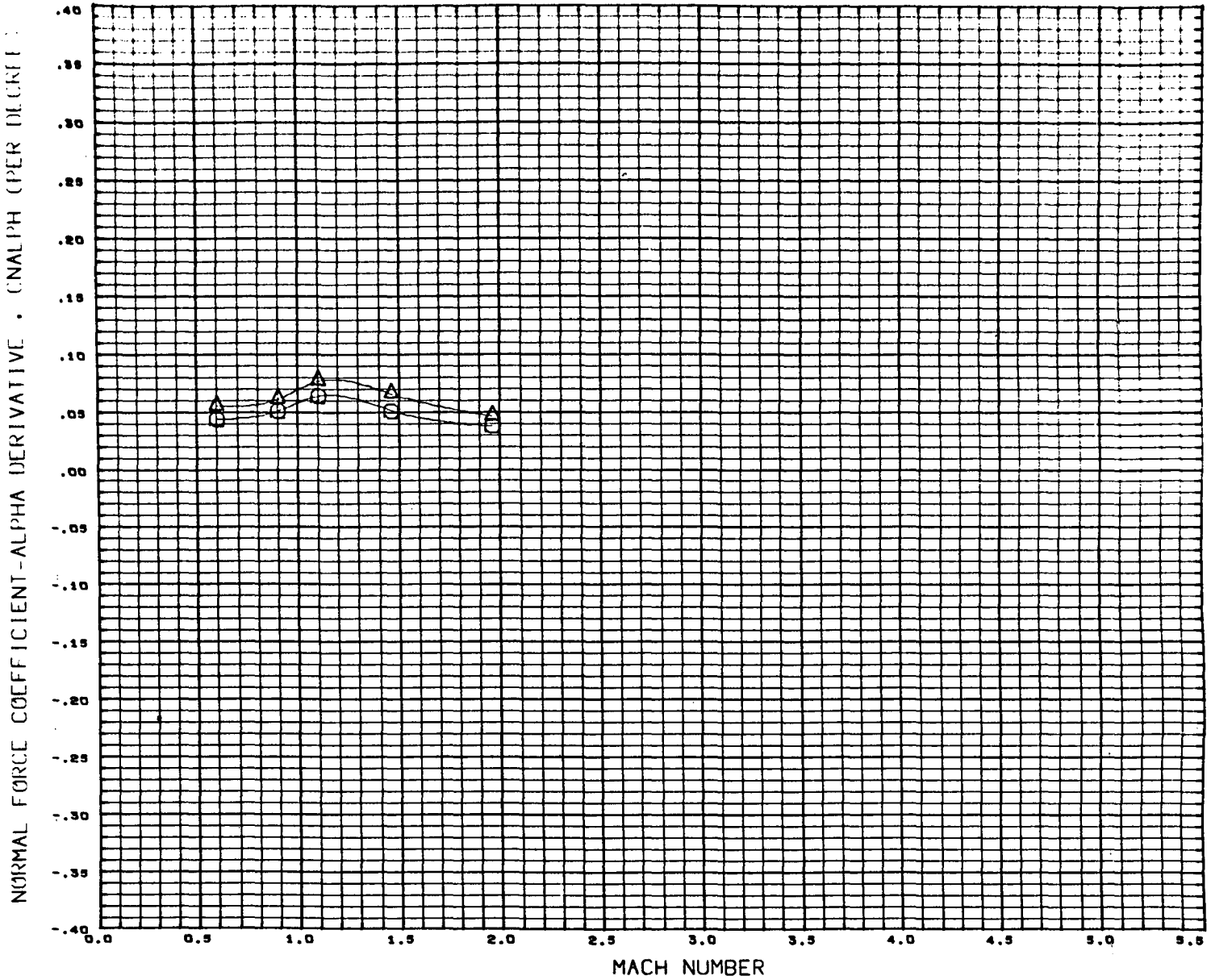
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(J3209A) MSFC490 NR/GD LAUNCH B20W14+B5
(J3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
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| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
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| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

ALPHA=0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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(J3210A) MSFC490 NR/GD LAUNCH 820W14+B5W17

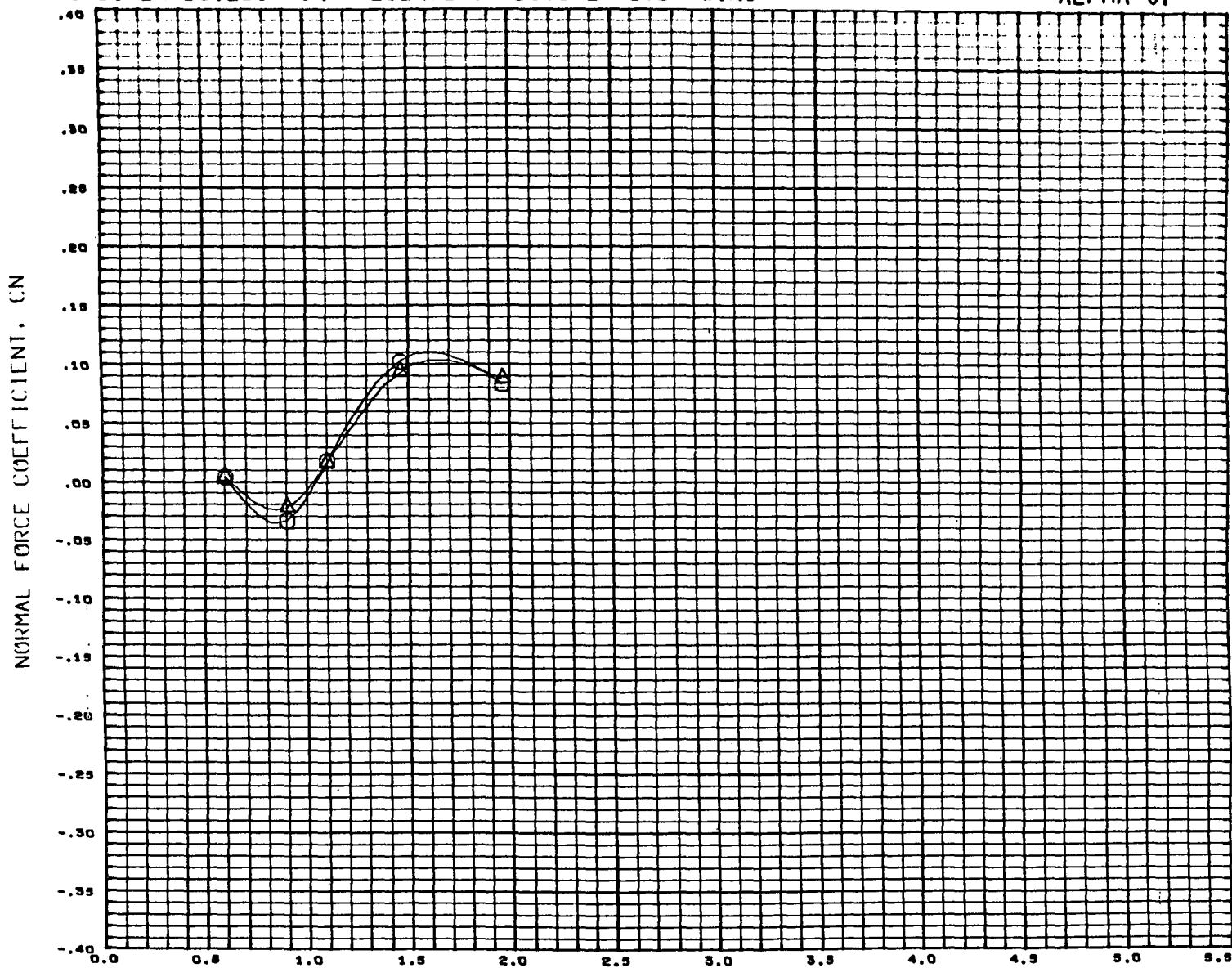
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| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
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| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

ALPHA=0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (K3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17

MACH NUMBER

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | | 1.000 | SREF | 15.6560 SQ IN |
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| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (K3209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (K3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

MACH NUMBER

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | BREF | 6.0990 INCHES |
| | | | XMRP | 0.0000 |
| | | | YMRP | 0.0000 |
| | | | ZMRP | 0.0000 |
| | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY-WING

ALPHA=0.



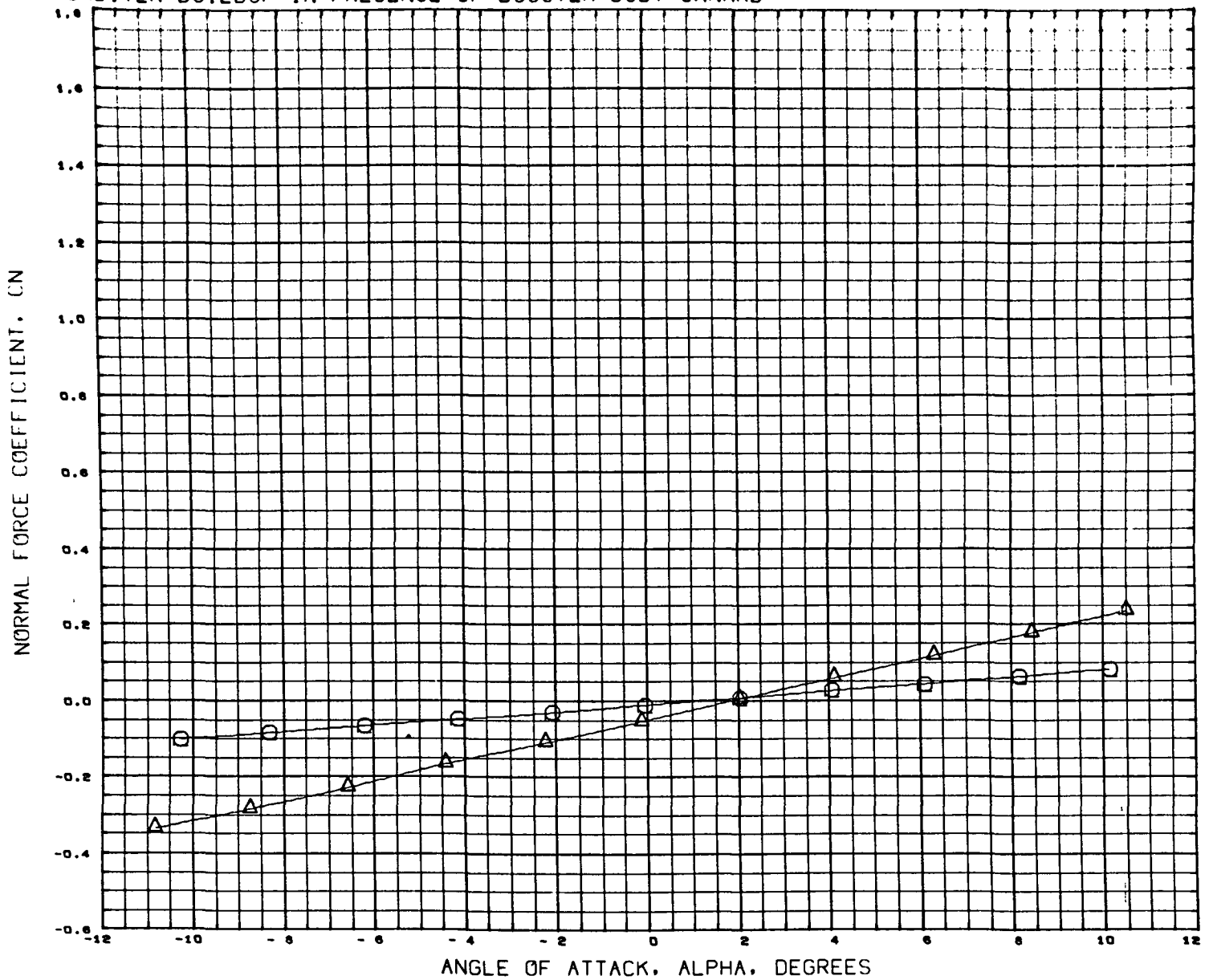
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 (K3210A) MSFC490 NR/GD LAUNCH B20W14+B9W17

MACH NUMBER

| BETA | ELVATR | ELVORB | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
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| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0033 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

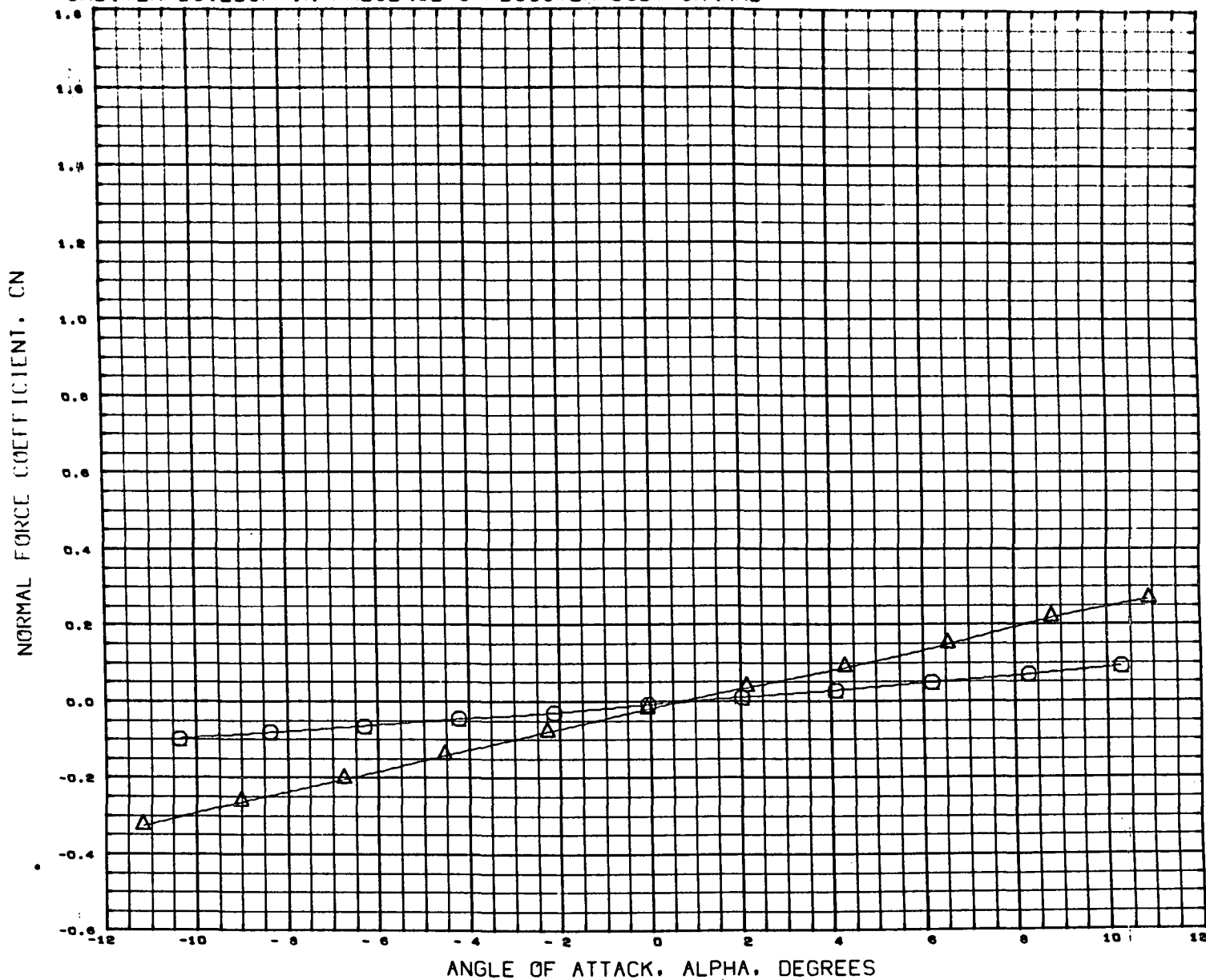


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3215A) MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
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| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.599

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



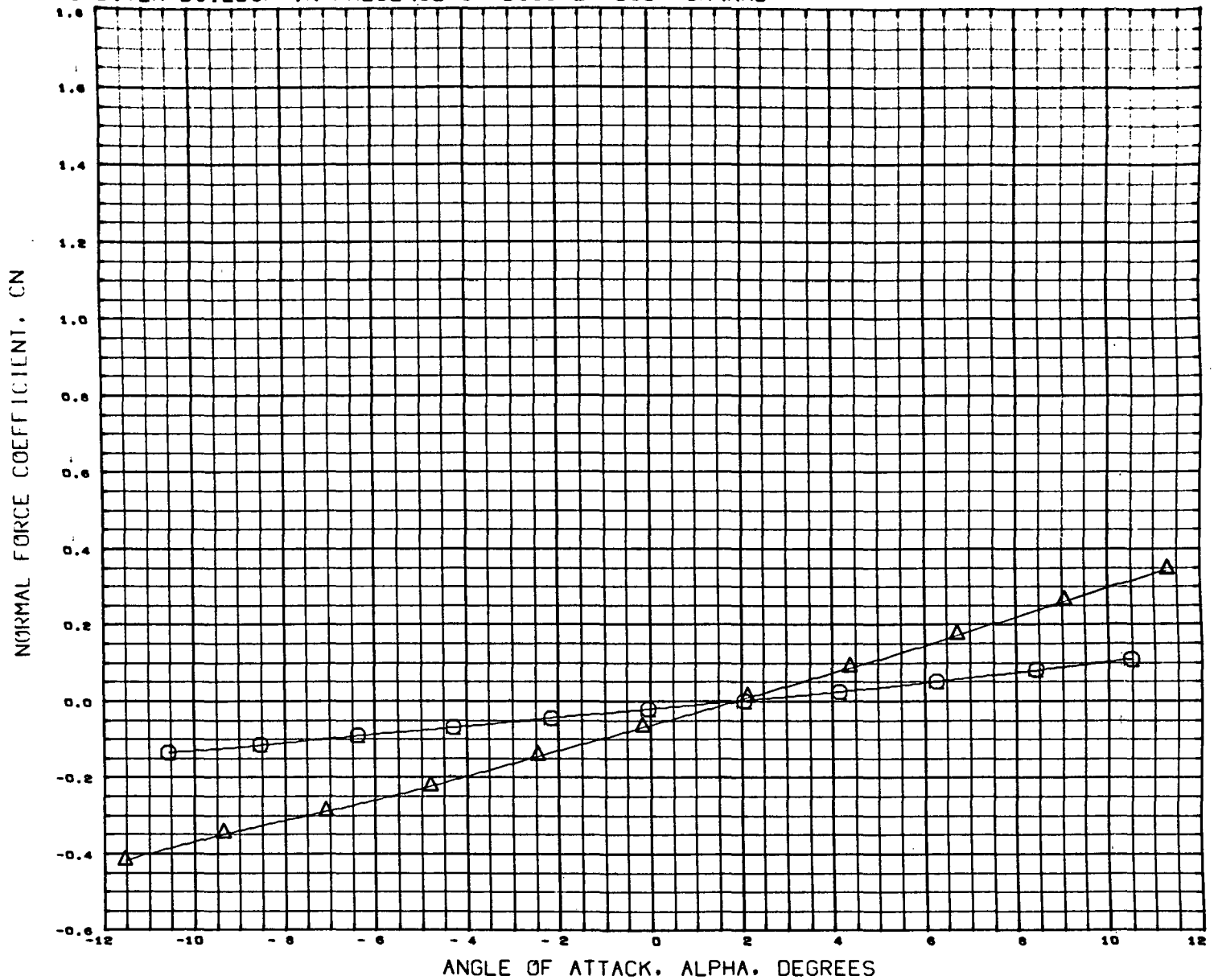
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0033 | SCALE |

MACH 0.895

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

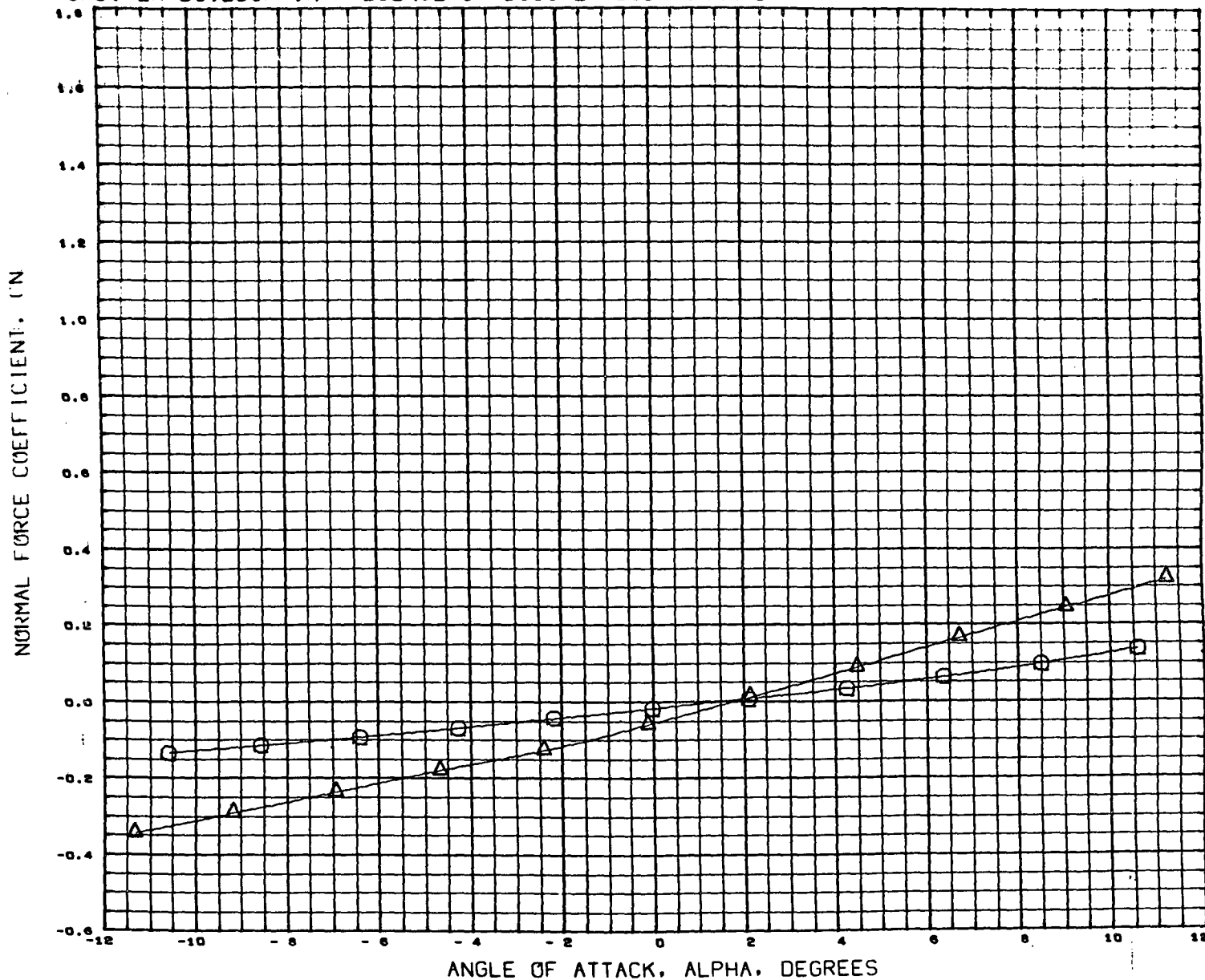


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) ○ MSFC49D NR/GD LAUNCH B20C4B+B5
 (H3215A) △ MSFC49D NR/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

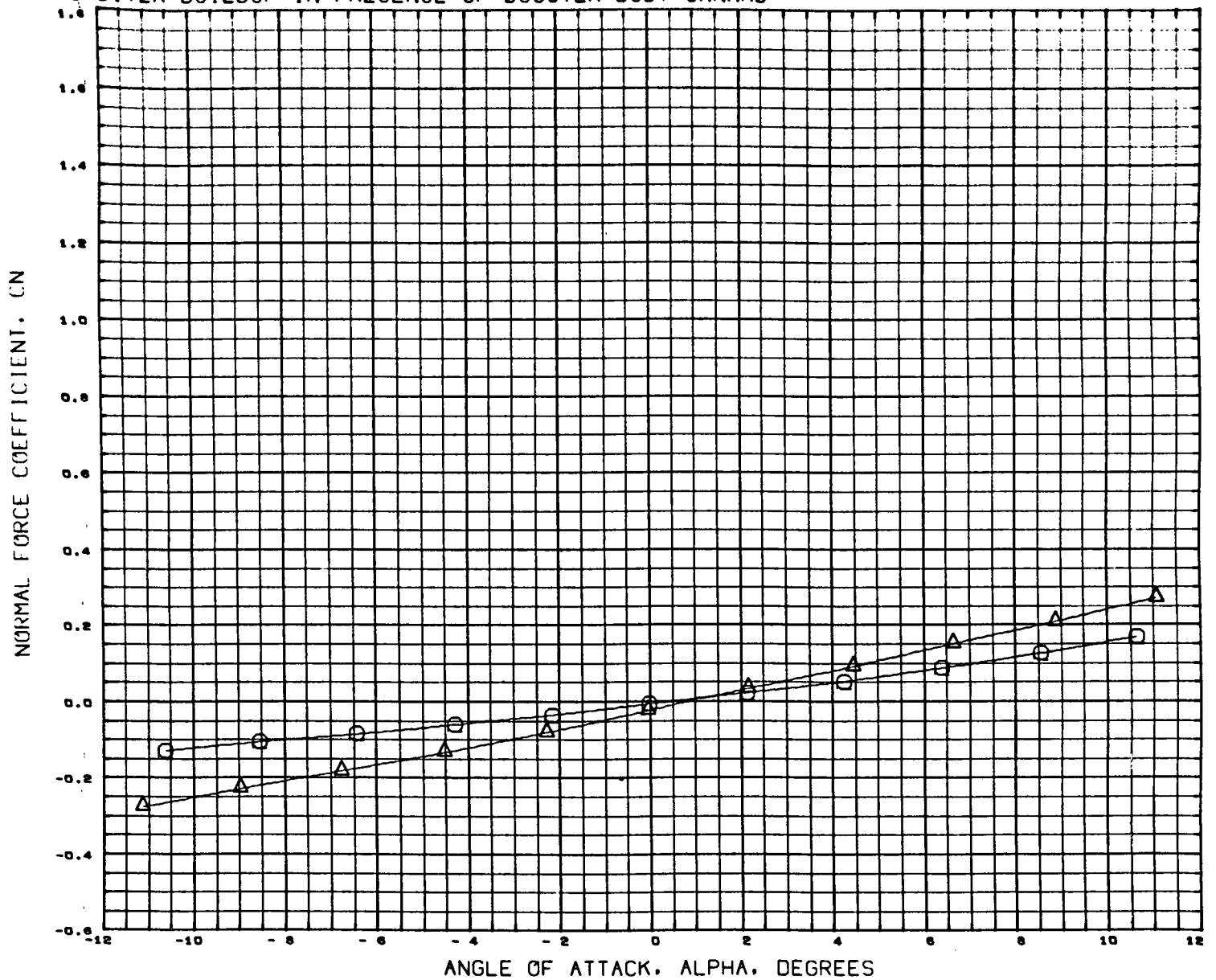


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (H3212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0980 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
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| | | | | SCALE 0.0035 SCALE |

MACH 1.466

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



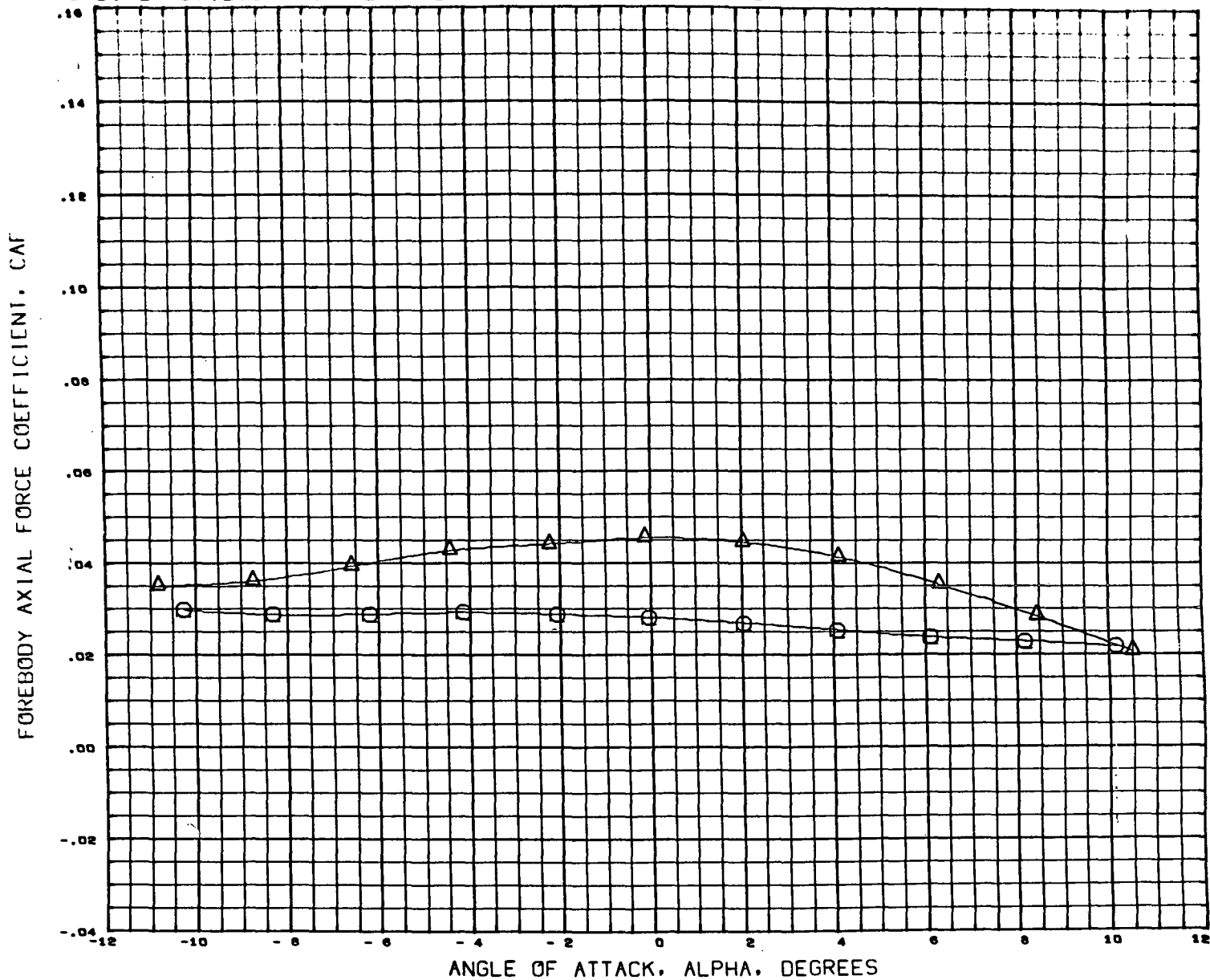
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 13.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.955

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



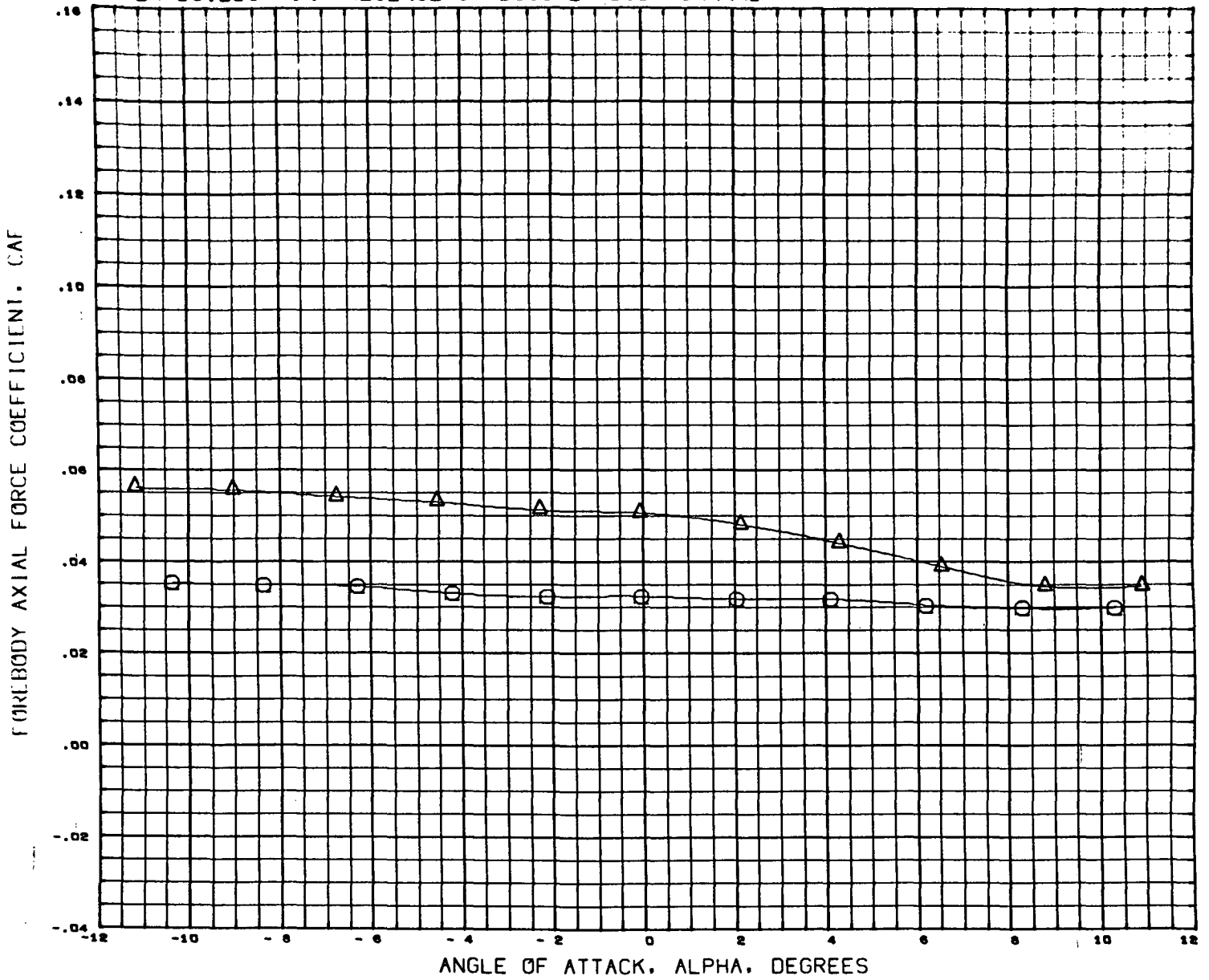
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 (H3219A) MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

BETA CANARD ORBINC POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
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 YMRP 0.0000
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 SCALE 0.0035 SCALE

MACH 0.999

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

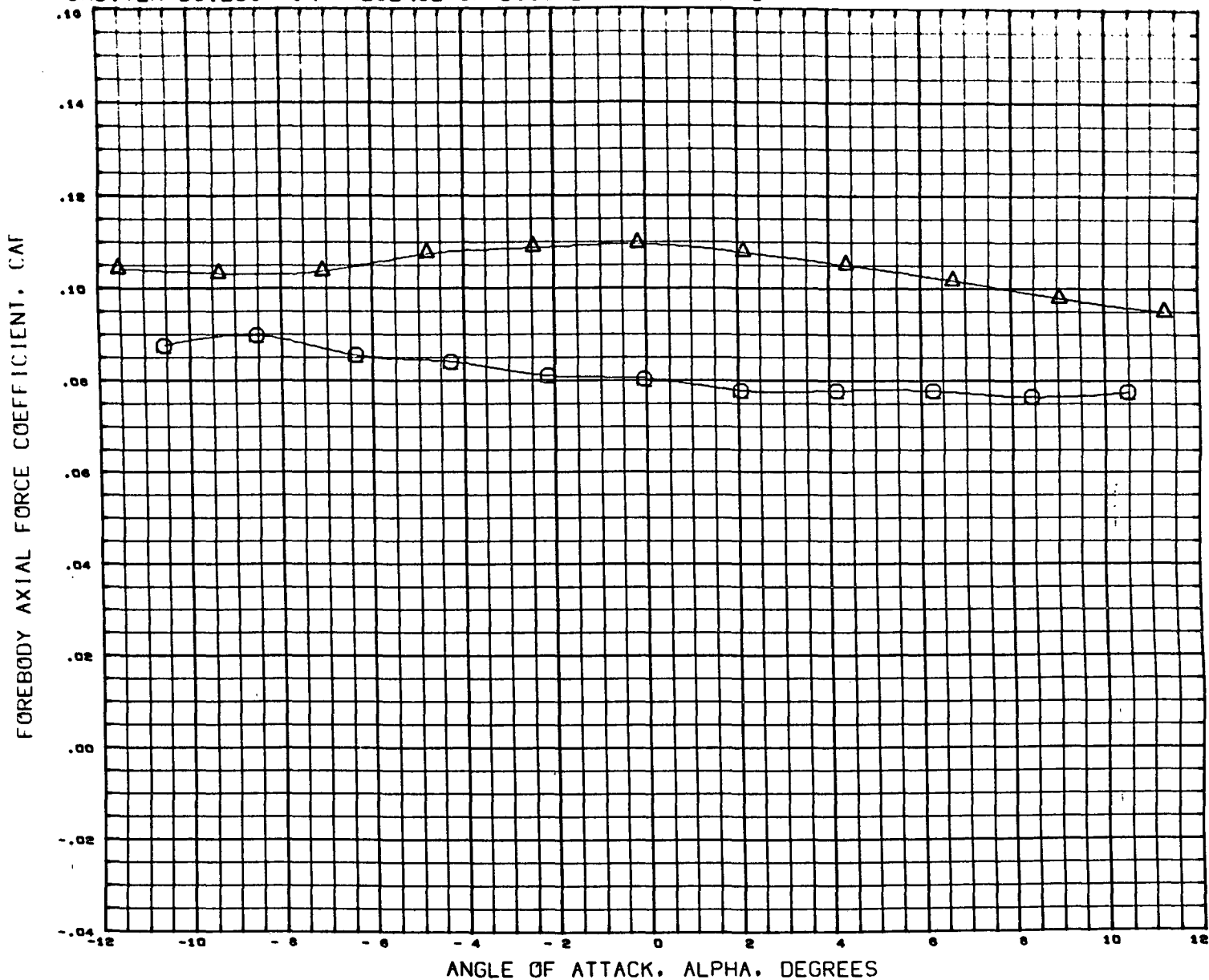


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (H3212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
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| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
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| | | | | SCALE 0.0035 SCALE |

MACH 0.695

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

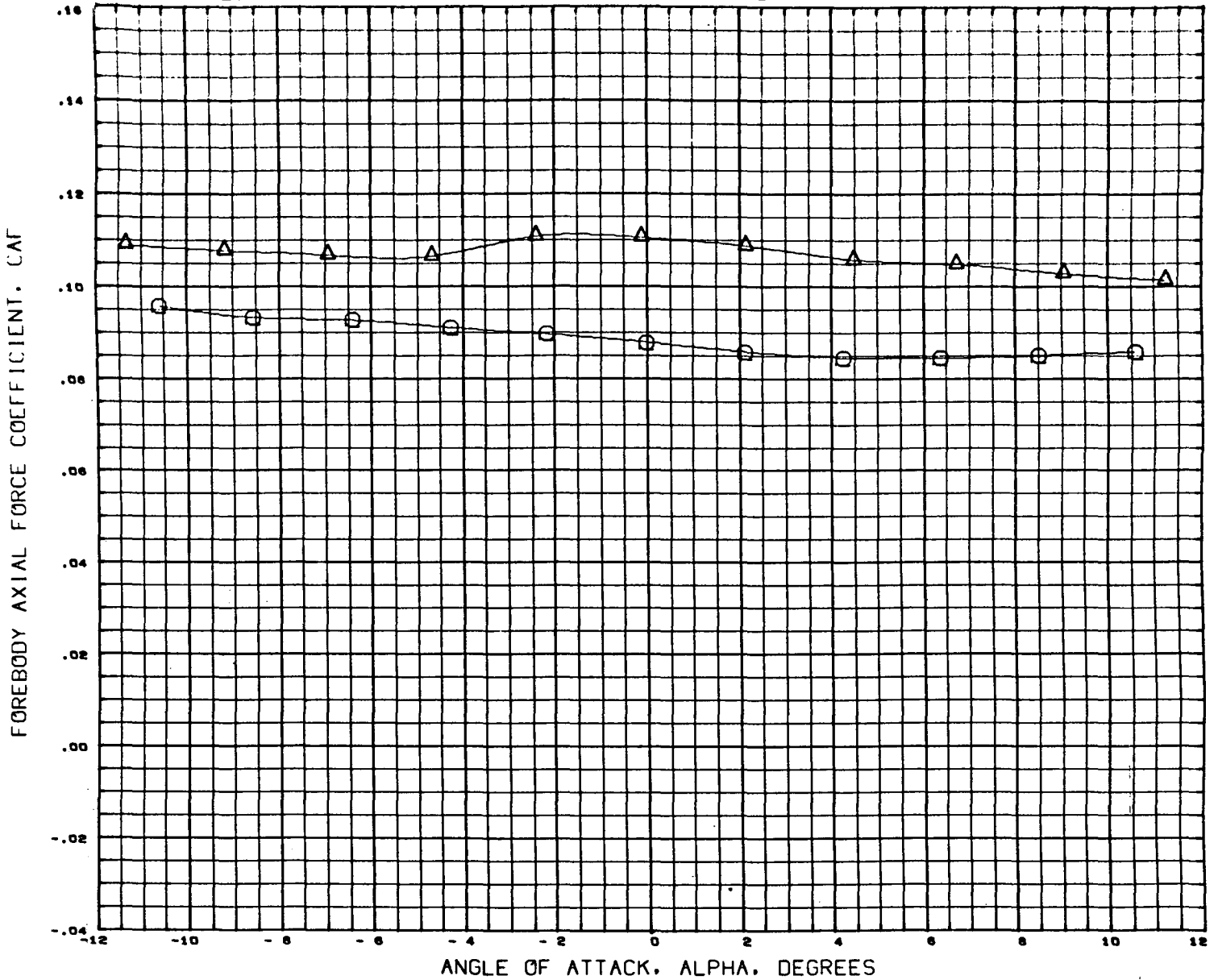


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3215A) MSFC490 NR/GD LAUNCH B20C4B+BSW17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
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| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
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| | | | | SCALE | 0.0035 SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

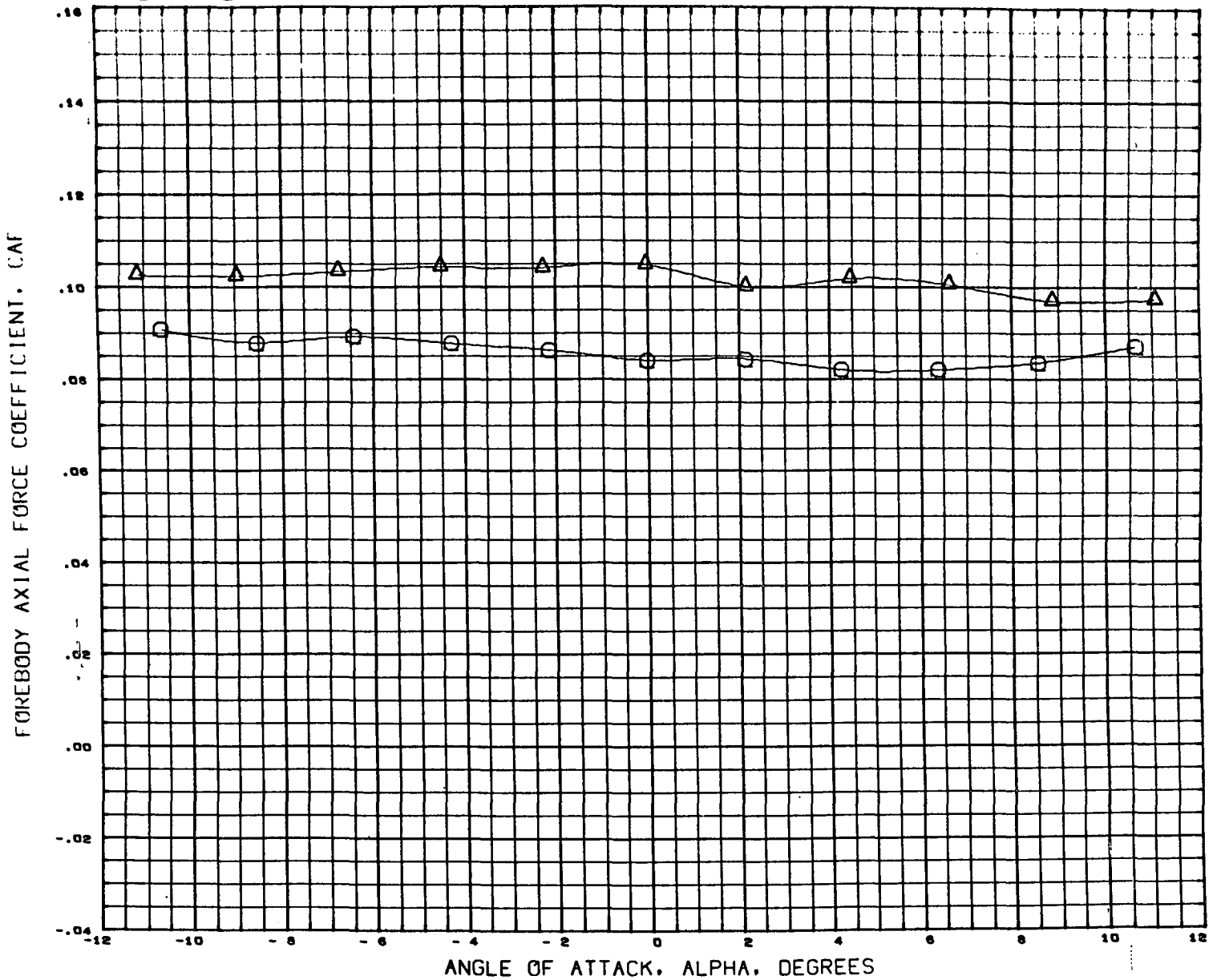


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| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
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| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
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| | | | | SCALE | 0.0035 SCALE |

MACH 1.466

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



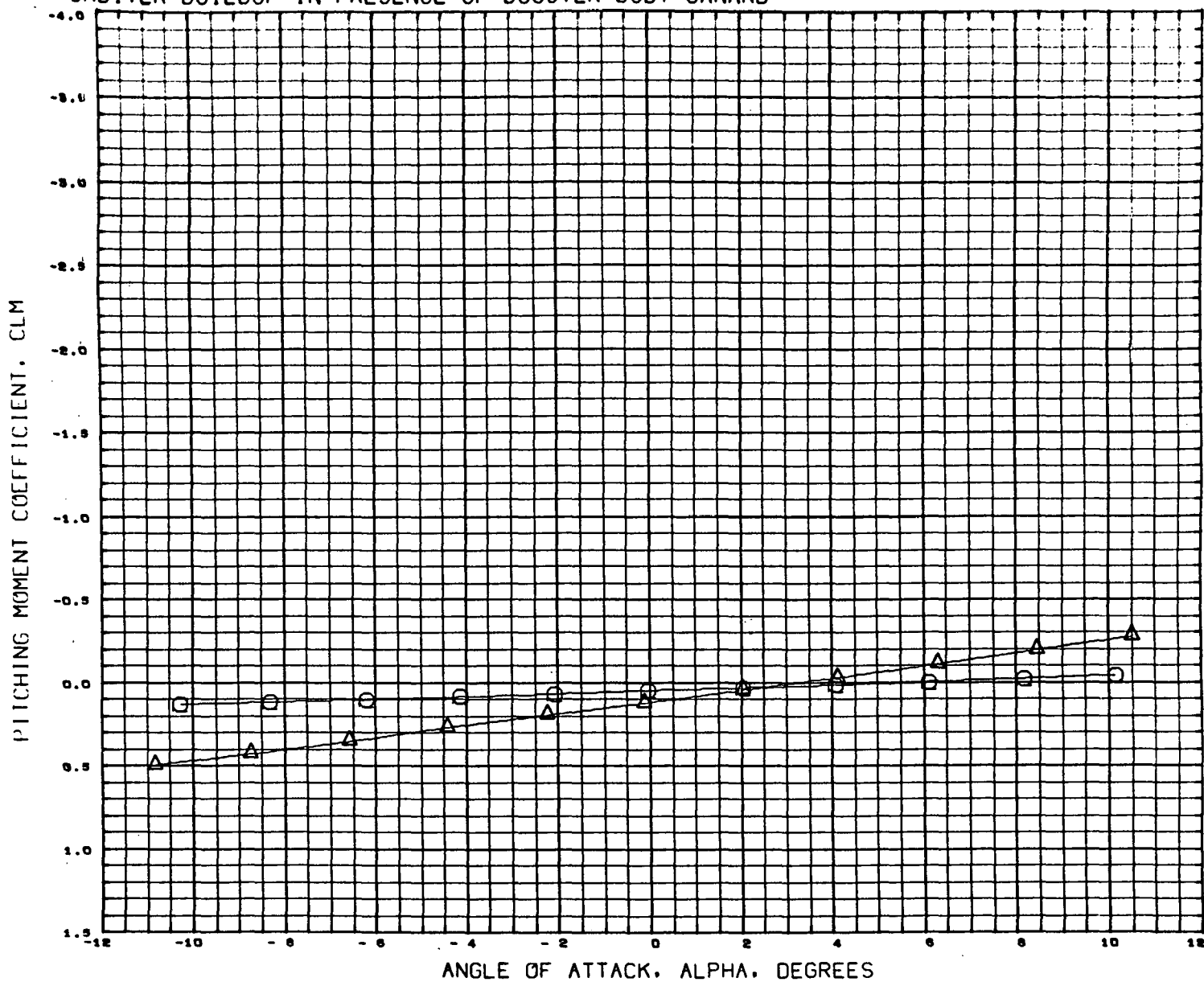
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 (H3215A) △ MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

BETA CANARD ORBINC POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
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 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0039 SCALE

MACH 1.955

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



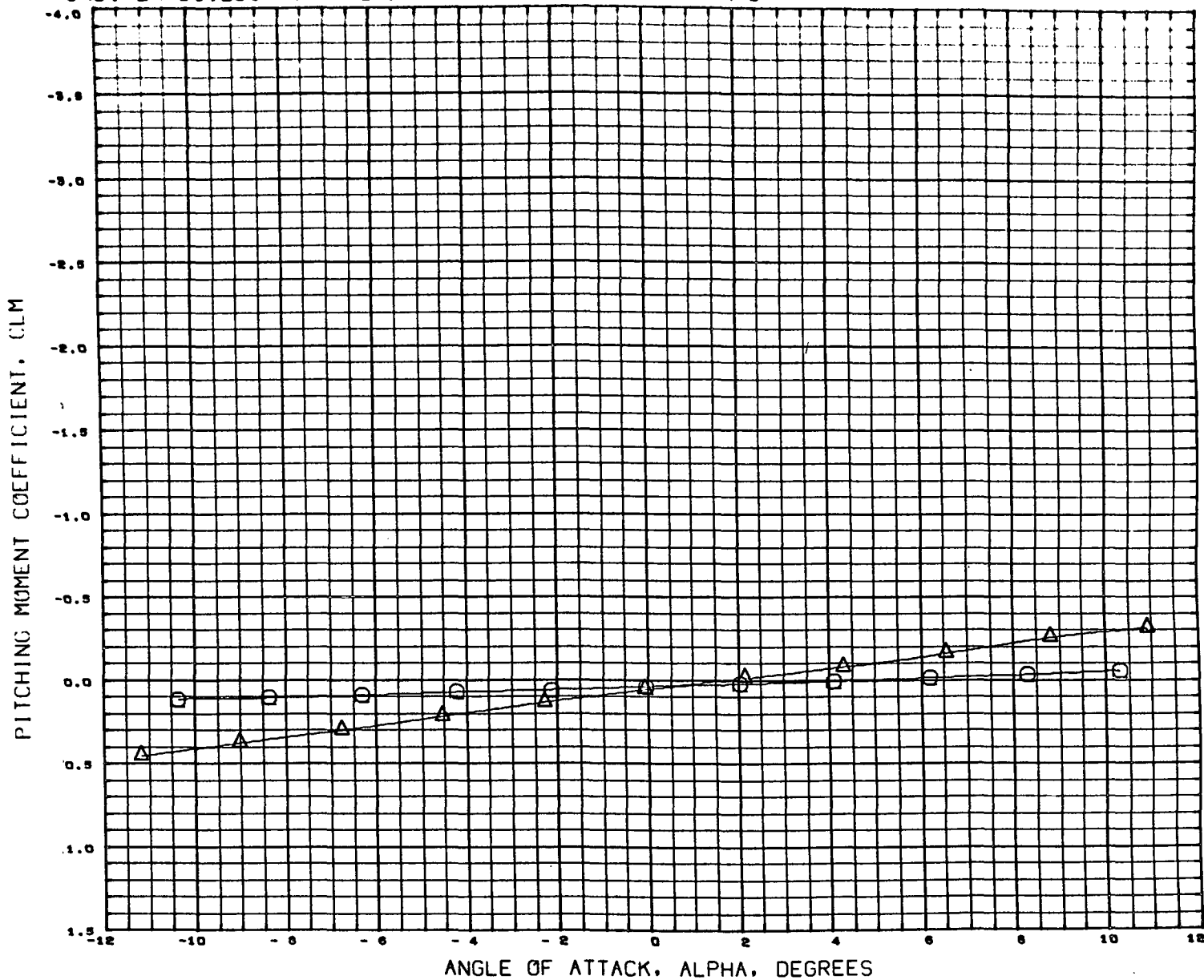
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|-----------------|--------------------------------------|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
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| ZMRF | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 0.599

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



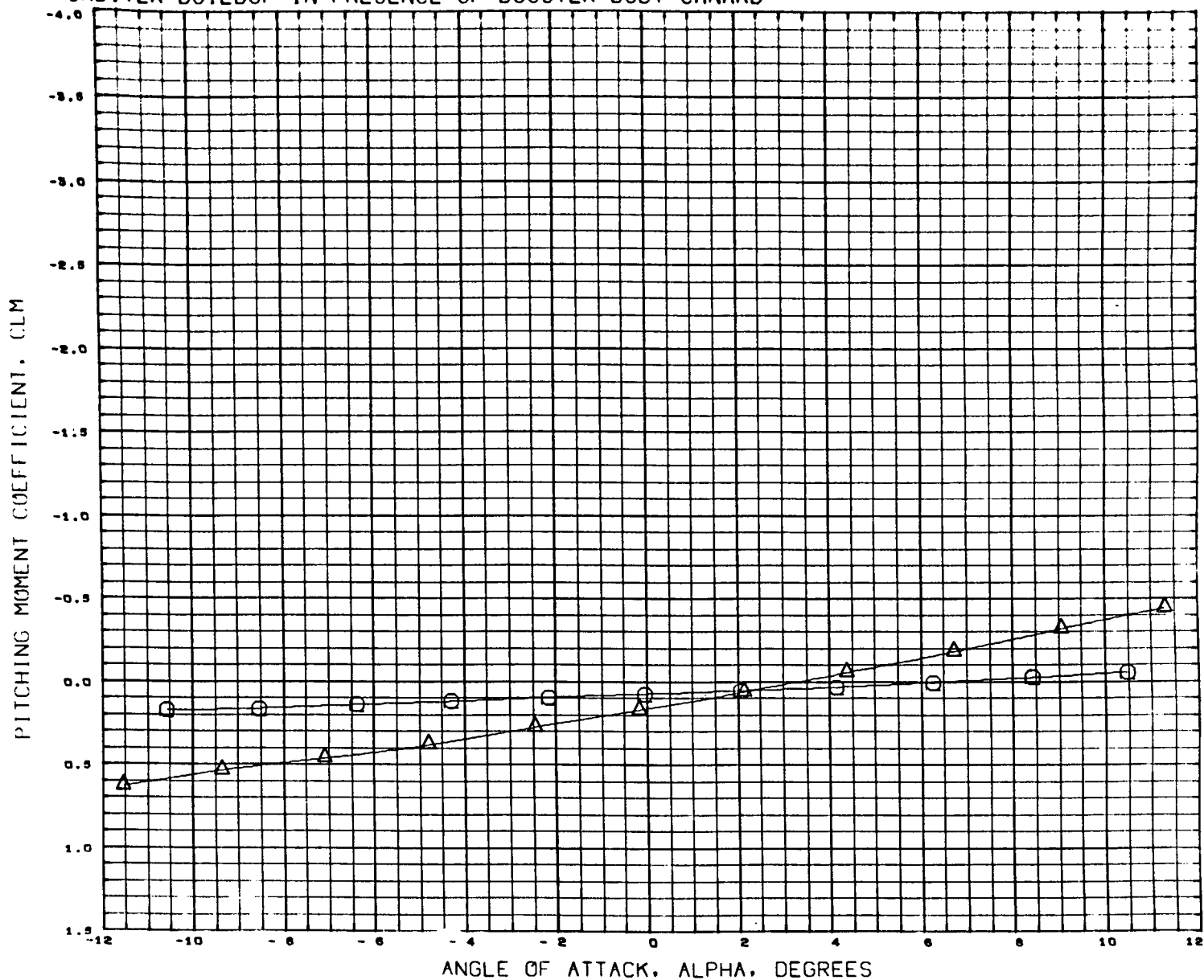
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|-----------------|--------------------------------------|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
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| XMRP | 0.0000 |
| YMRP | 0.0000 |
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| SCALE | 0.0035 SCALE |

MACH 0.895

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

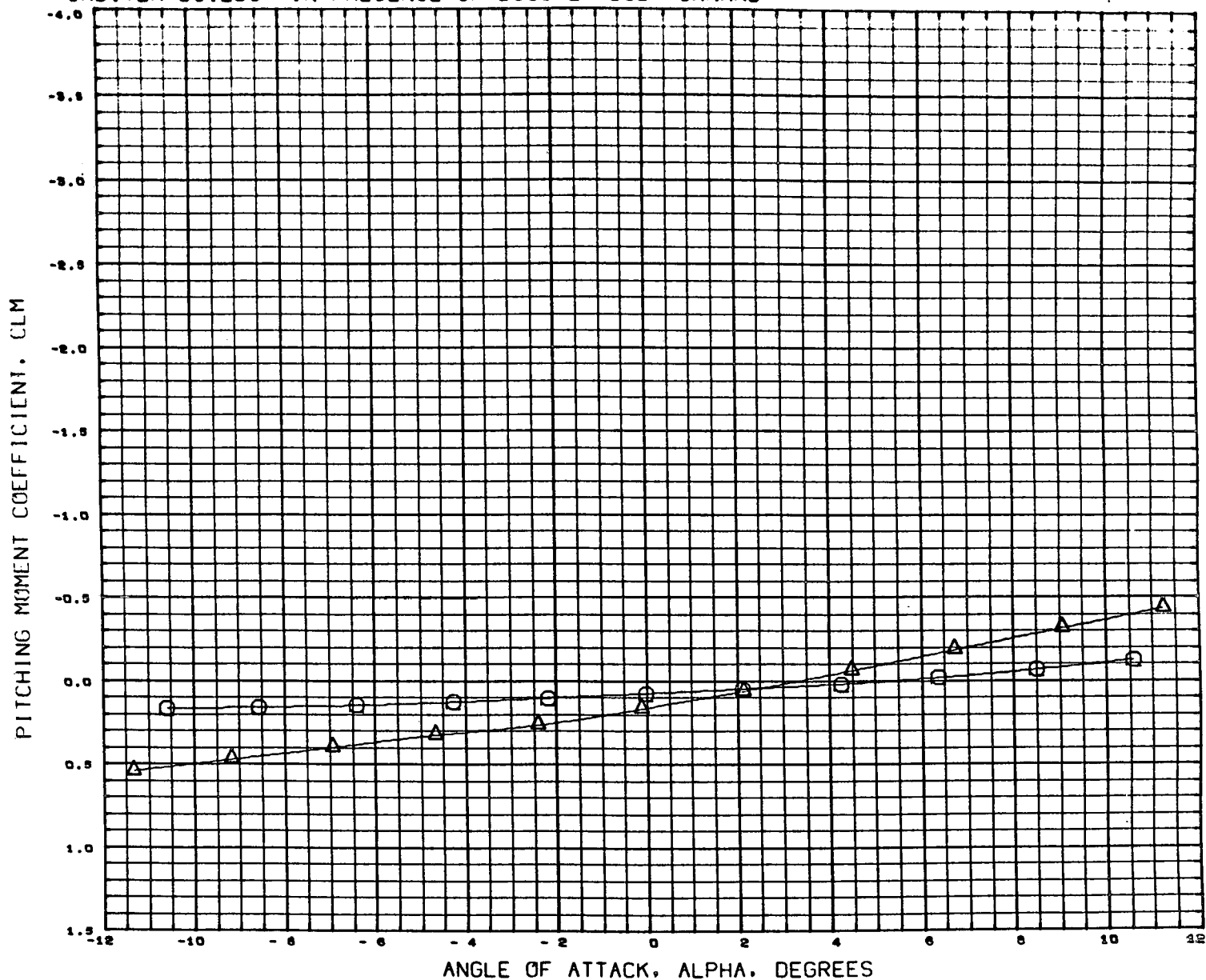


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) ○ MSFC490 NP/GD LAUNCH B20C4B+B5
 (H3215A) △ MSFC490 NP/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
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| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
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MACH 1.097

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

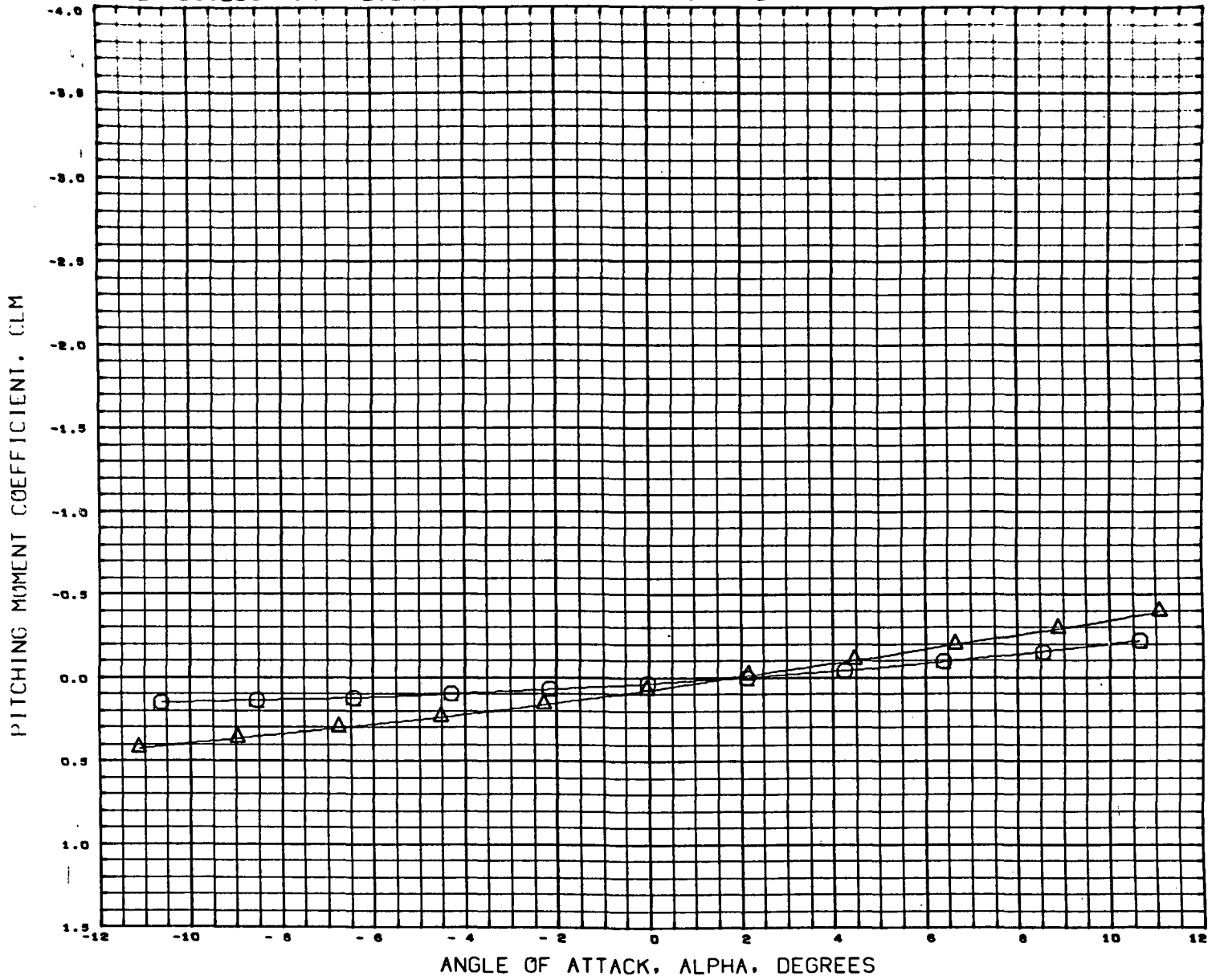


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+BSW17V17 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 2.466

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

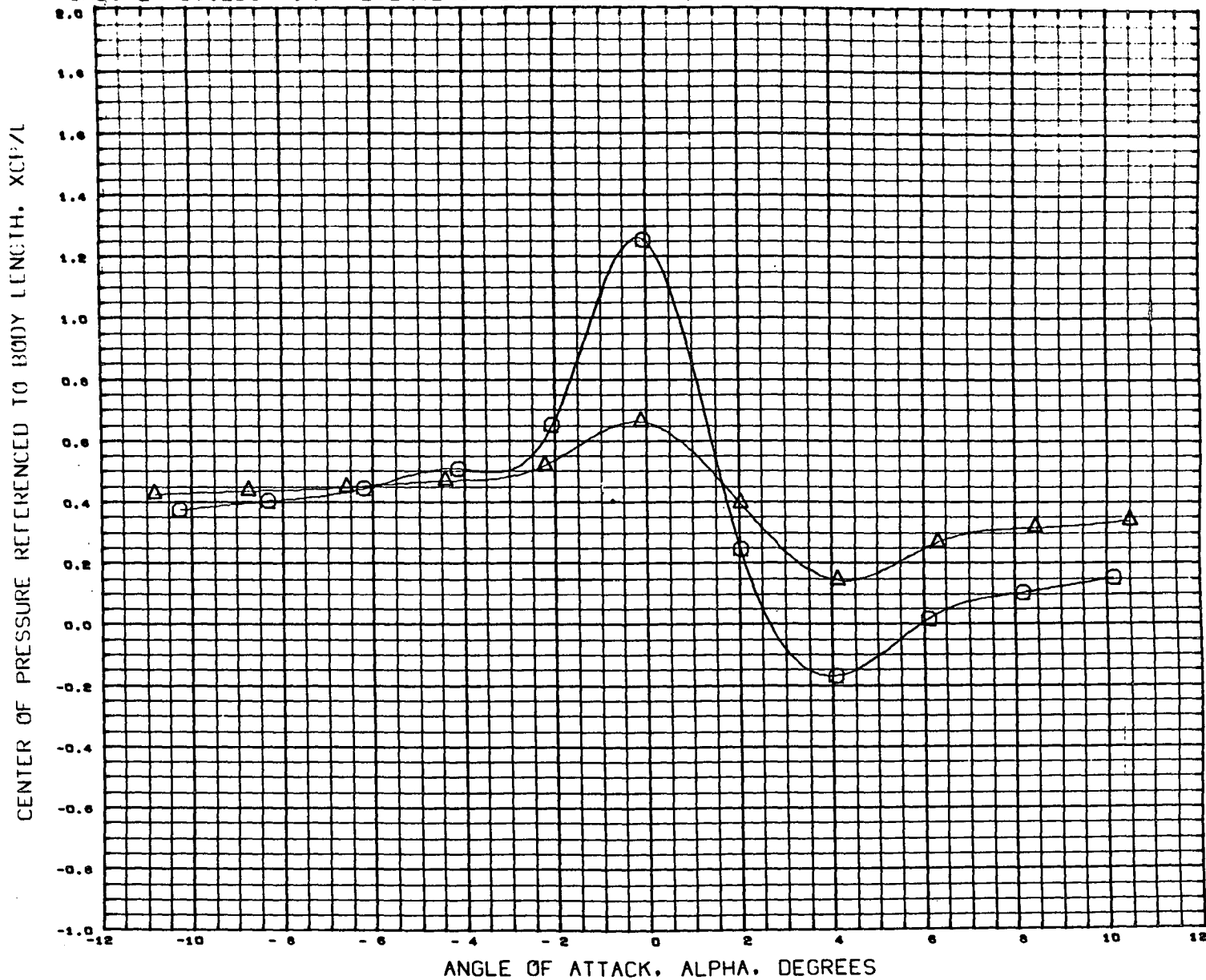


| | |
|-----------------|--------------------------------------|
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
| (H3212A) ○ | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3219A) △ | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

| | | | | |
|-------|--------|--------|--------|-----------------------|
| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
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MACH 1.955

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



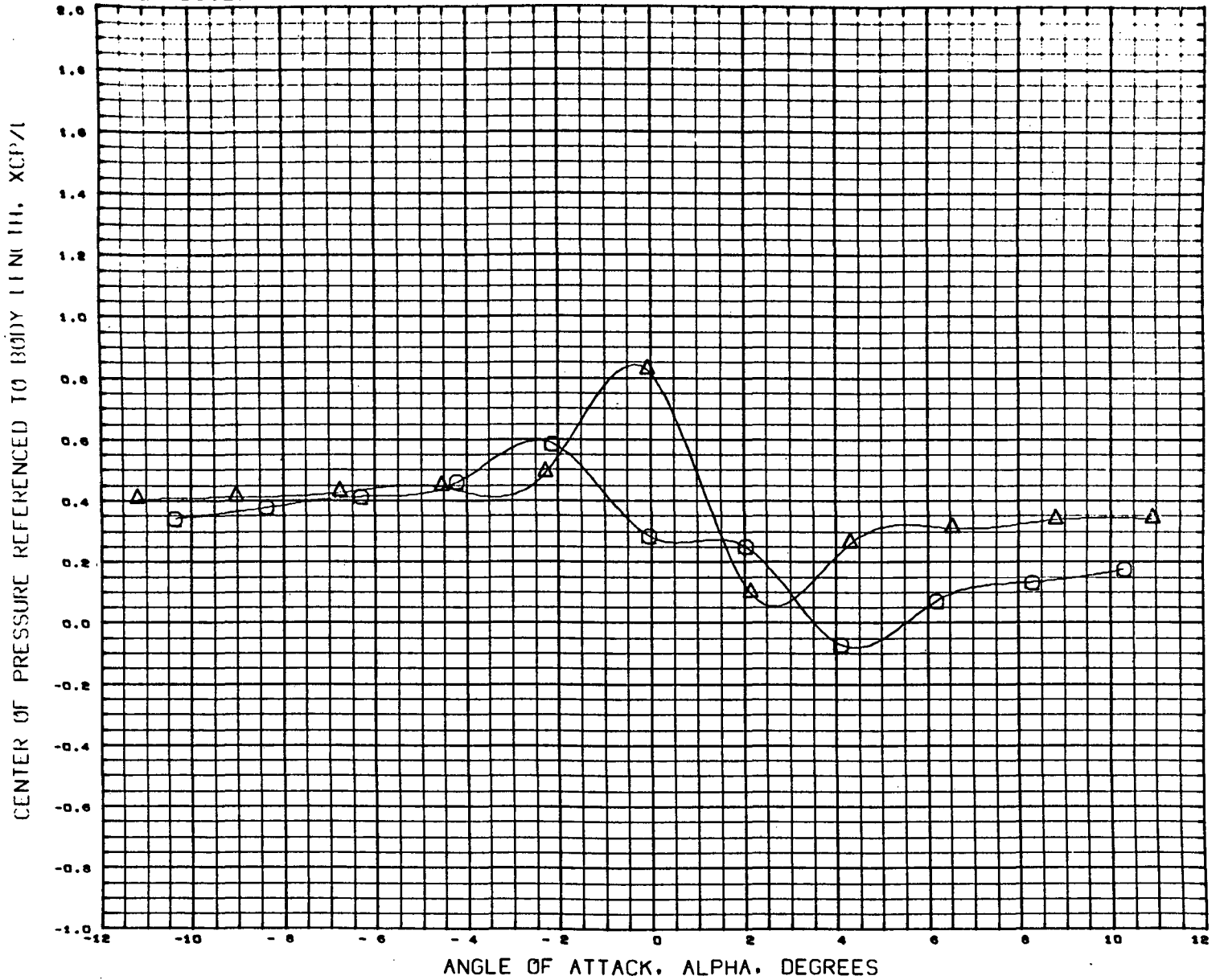
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 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3215A) MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

BETA CANARD ORBINC POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 1.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.599

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

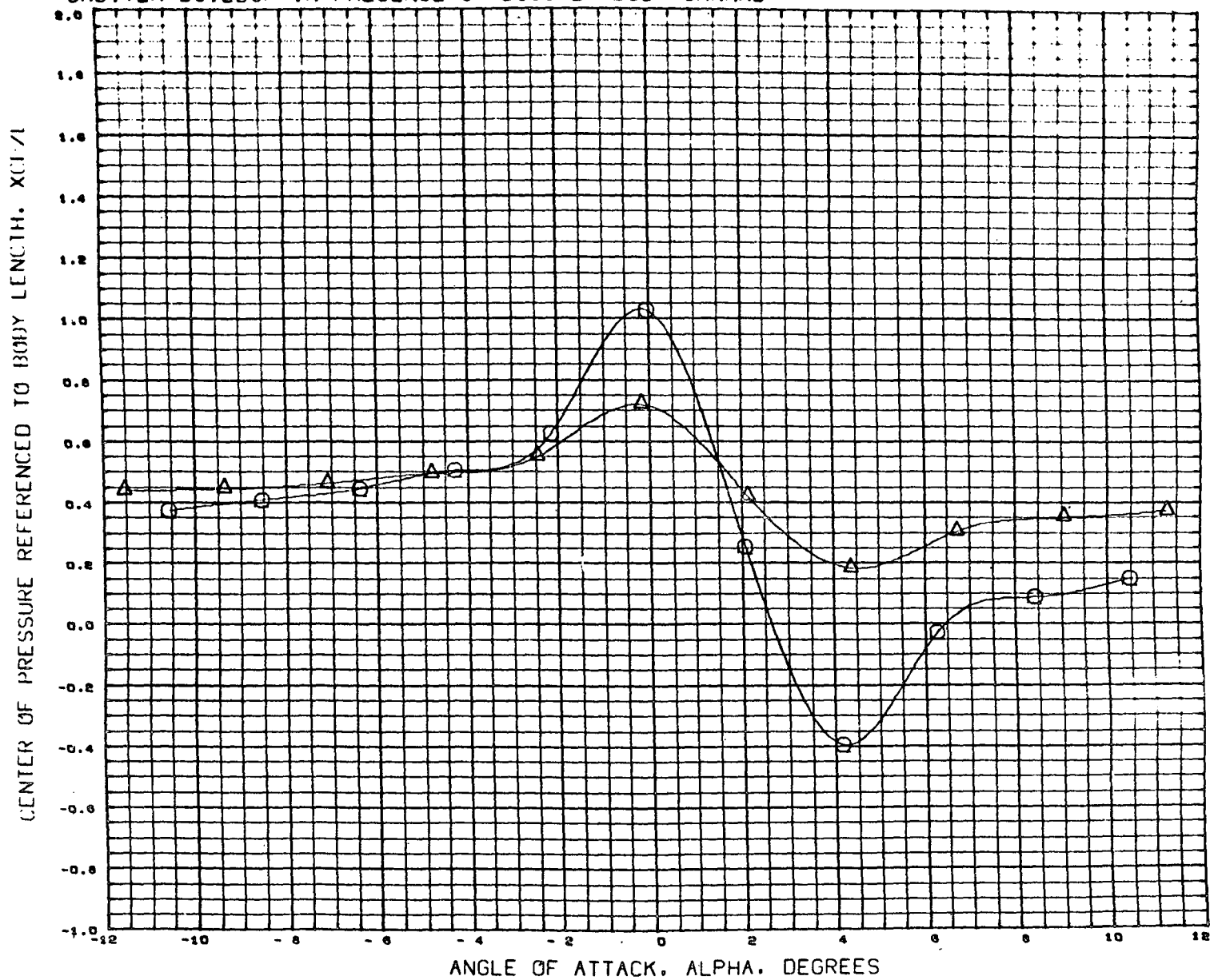


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 (H3215A) MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.895

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



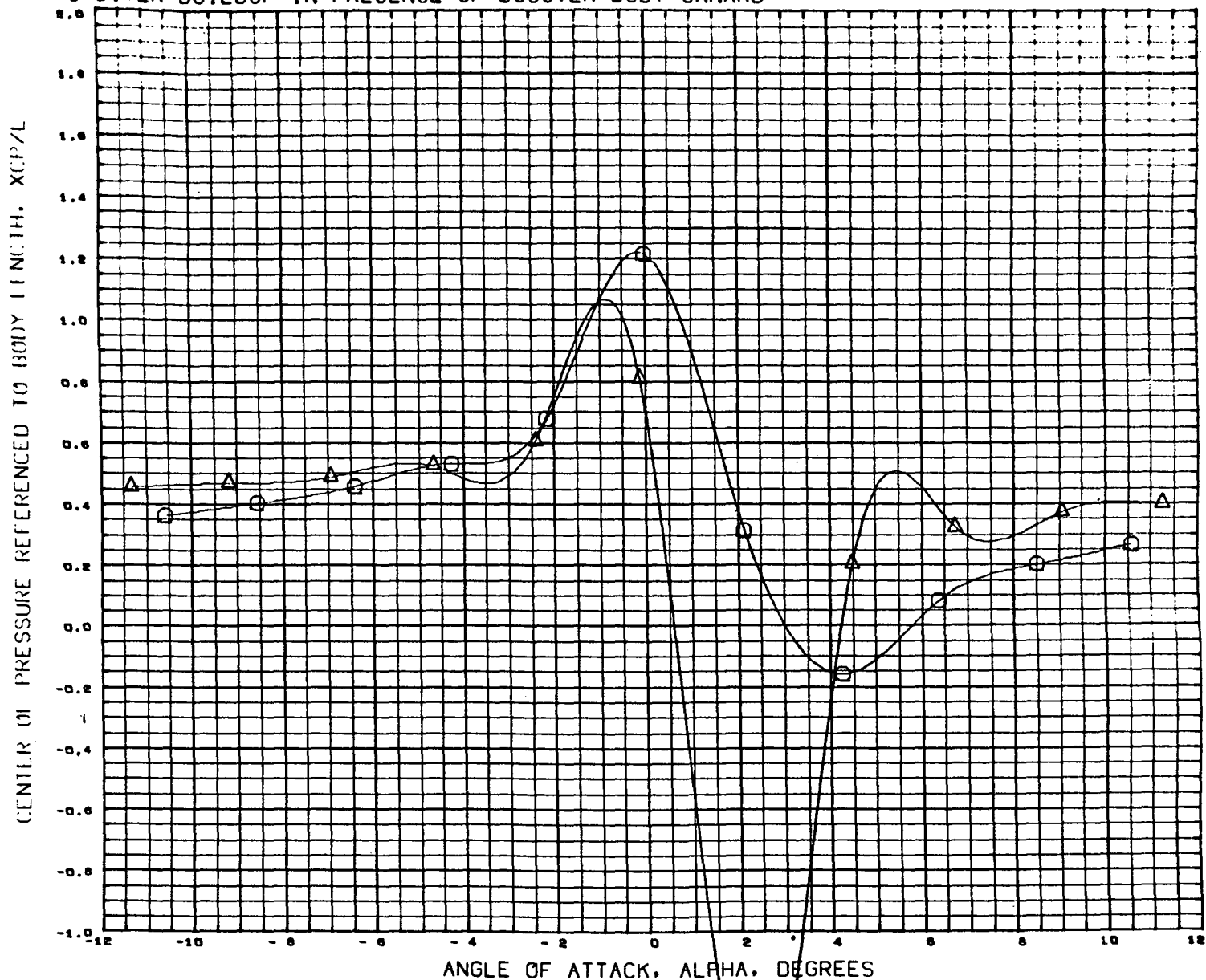
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 (H3215A) MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6960 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

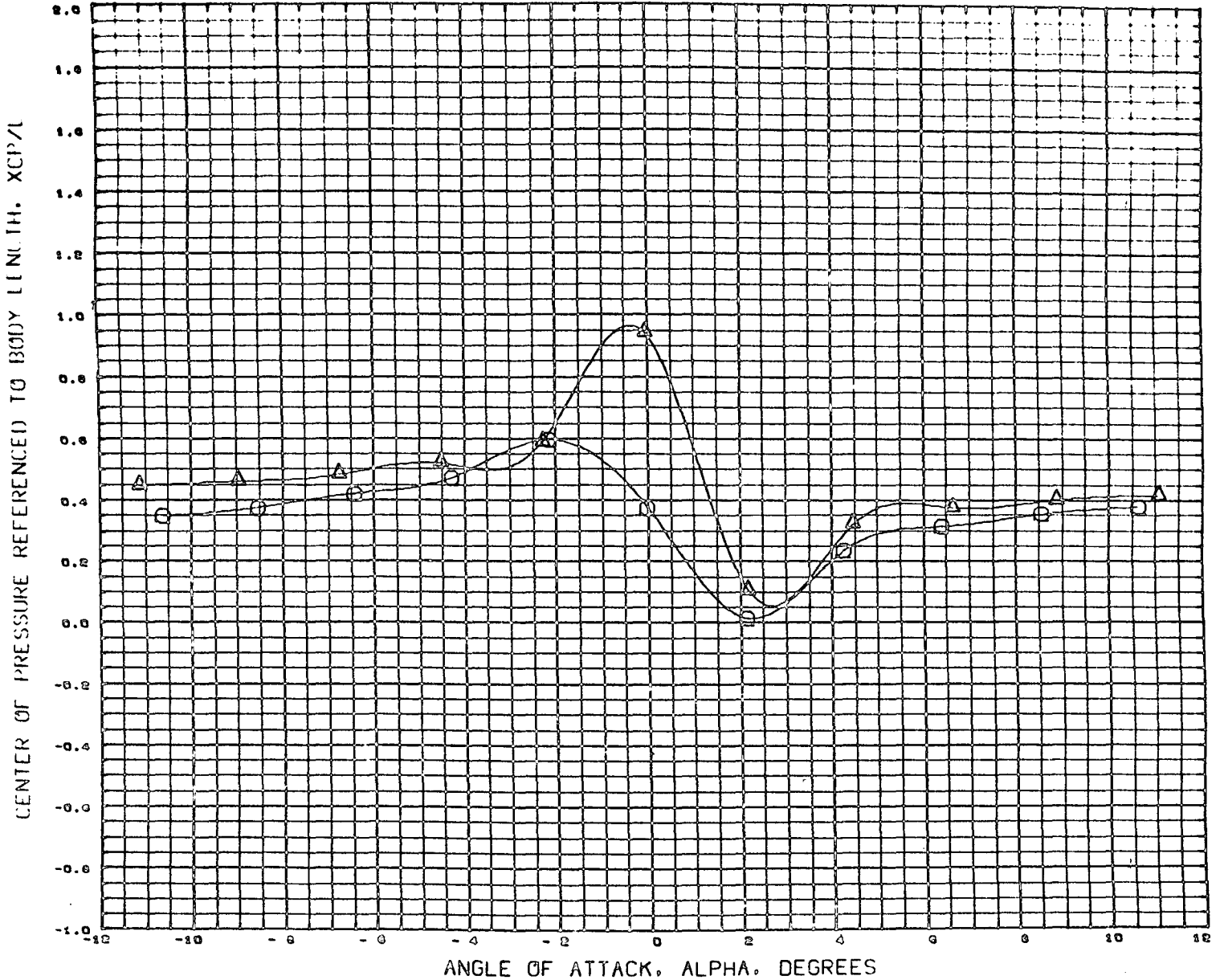


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3213A) MSFC490 NR/GD LAUNCH B20C4B+B3W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|--------------------------|
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| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0930 INCHES |
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| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.466

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



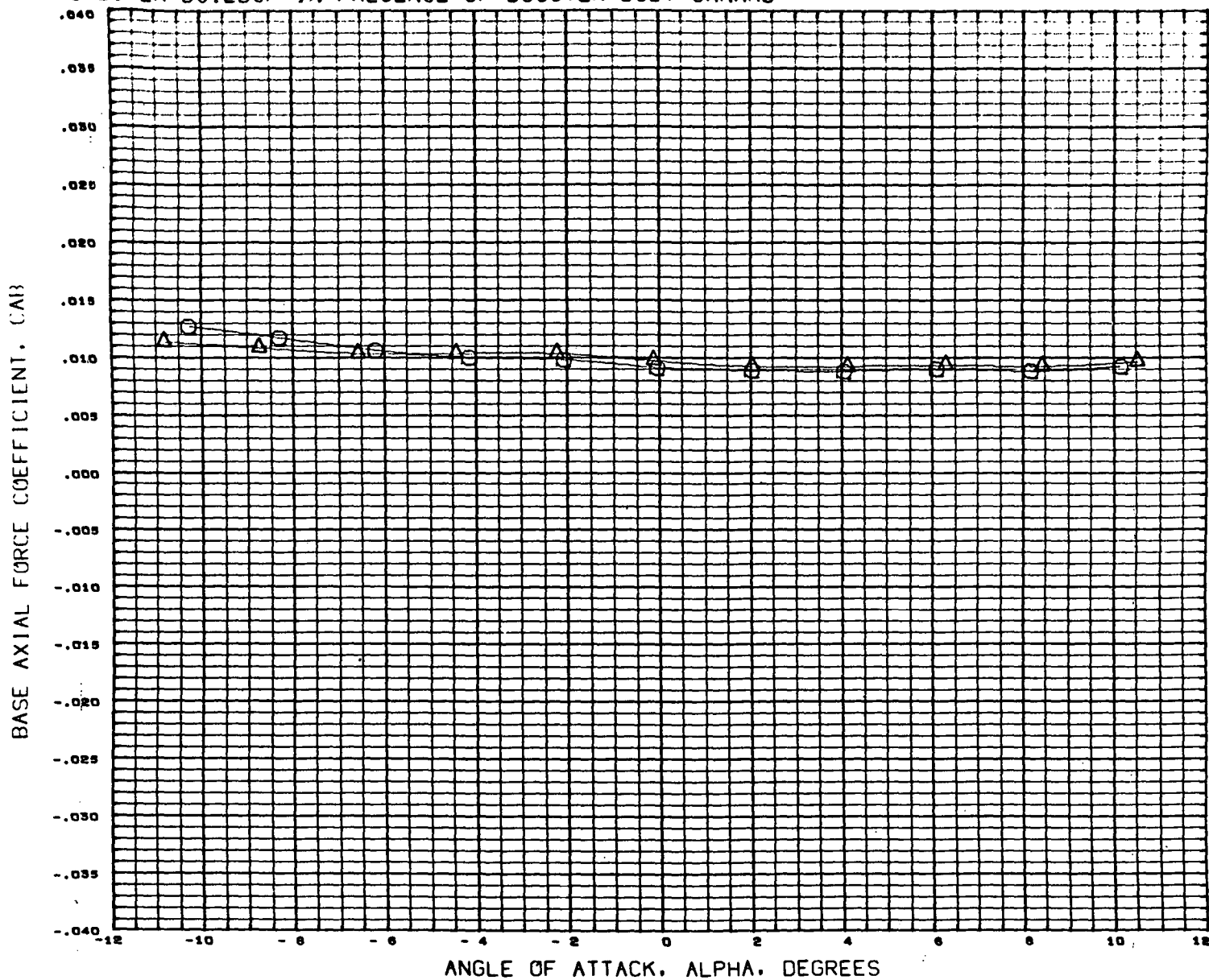
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3213A) MSFC490 NR/GD LAUNCH B20C4B+B3W17V17

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 19.0960 50 IN |
| LREF | 3.0990 INCHES |
| BREF | 0.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0033 SCALE |

MACH 1.999

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

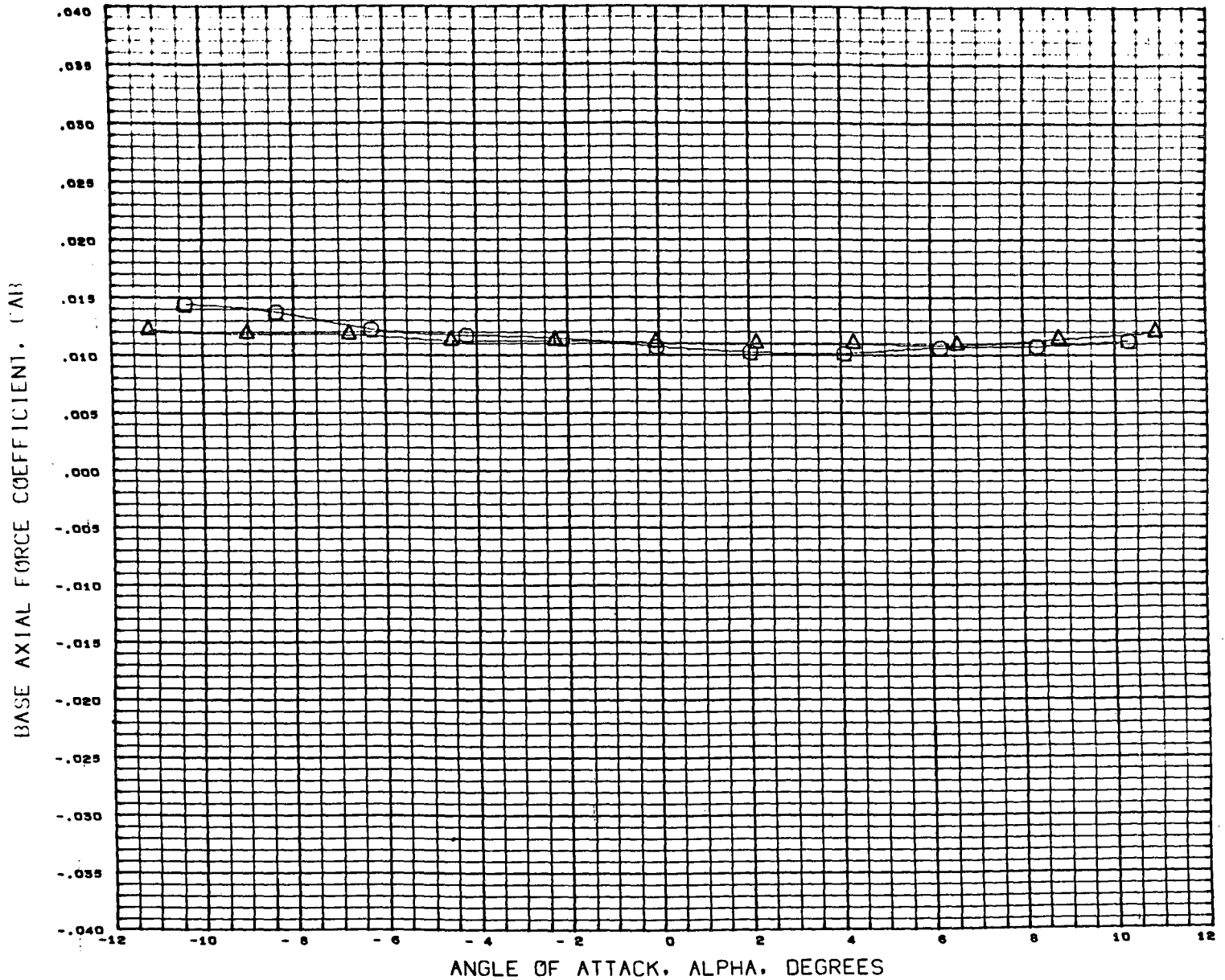


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+85W17V17 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
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| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.599

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

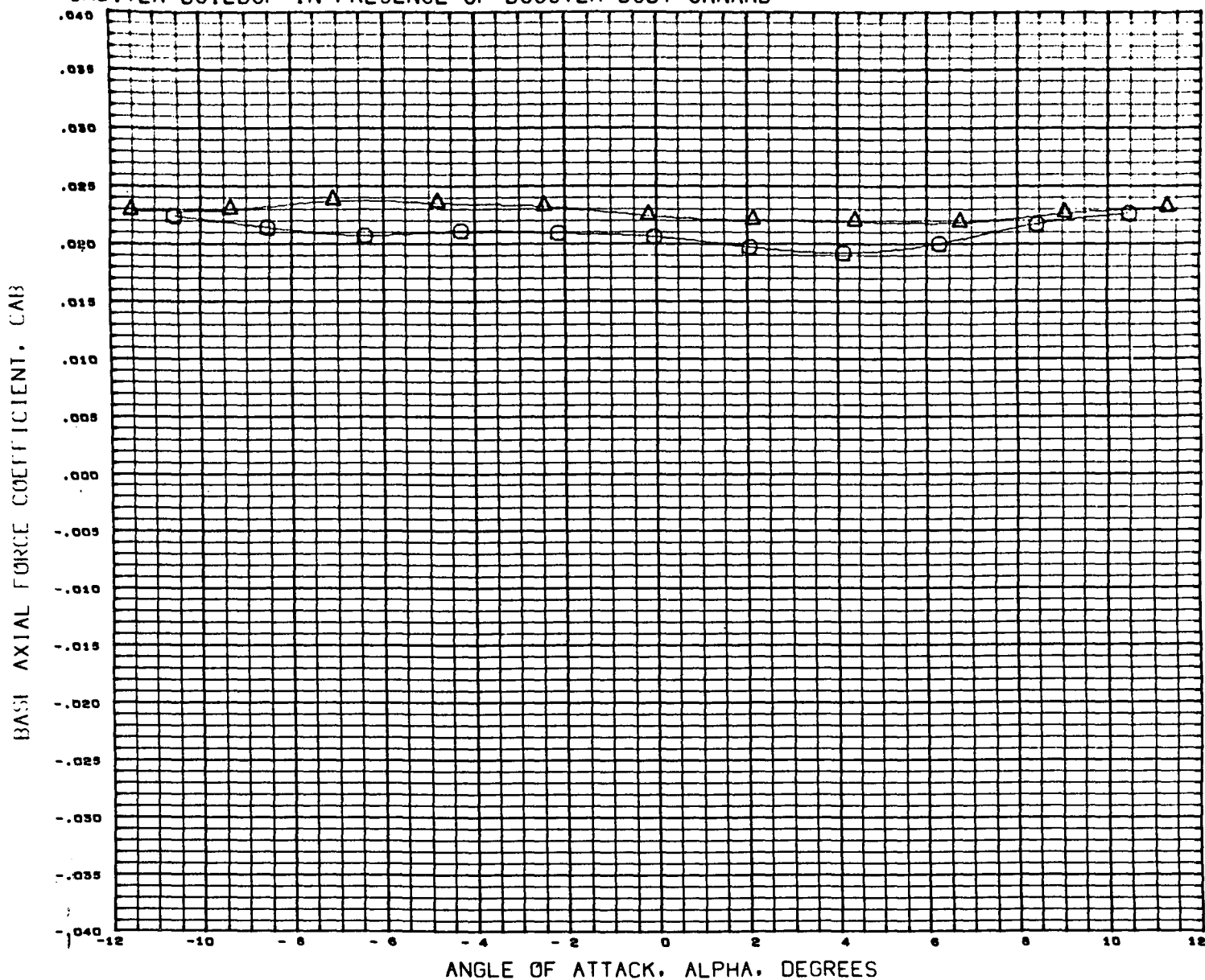


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3215A) △ MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0039 SCALE |

MACH 0.895

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

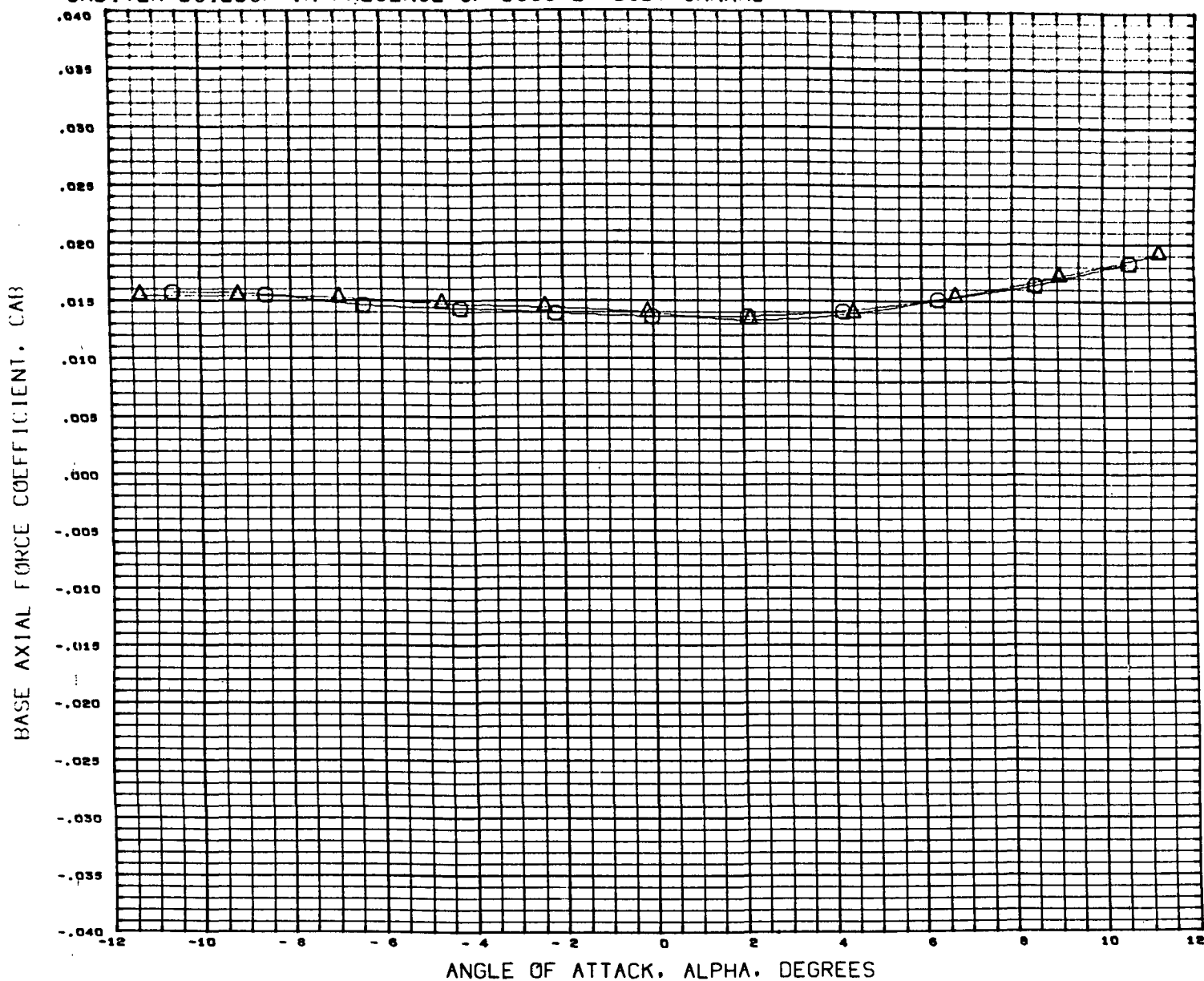


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0980 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



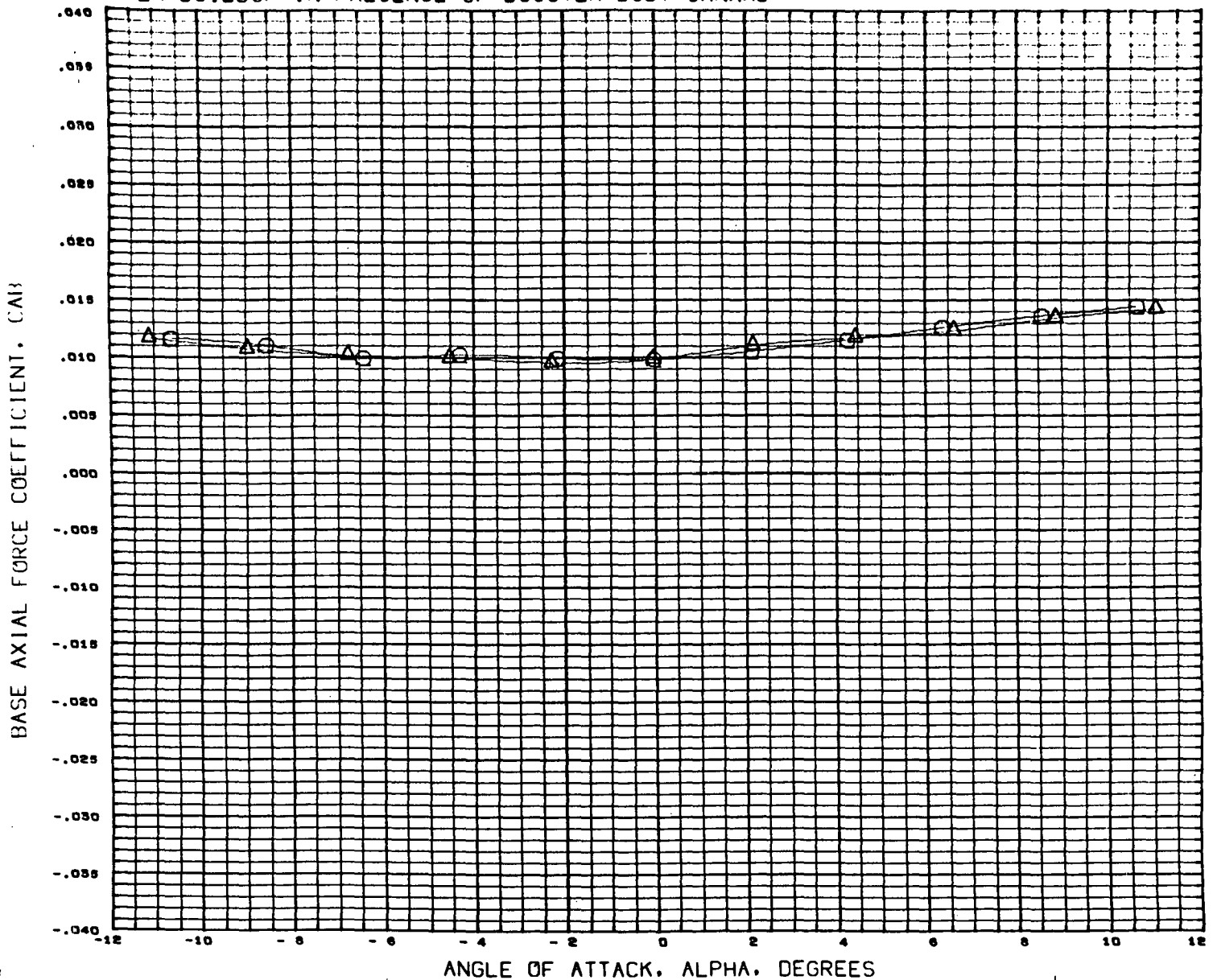
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
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| (H3215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |



| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.466

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



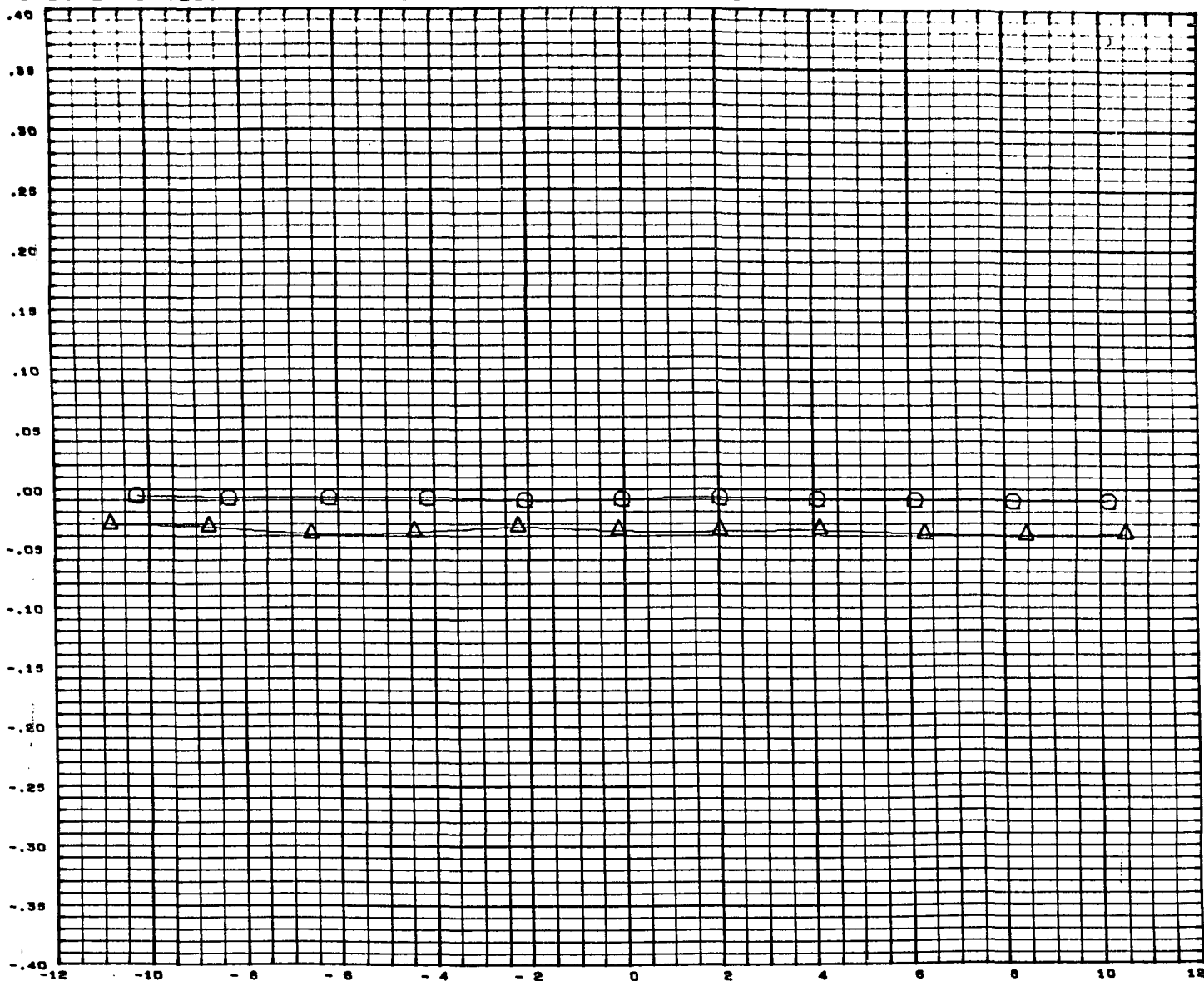
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3215A)  MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.955

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER HUNT)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (13212A) ○ | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (13215A) Δ | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

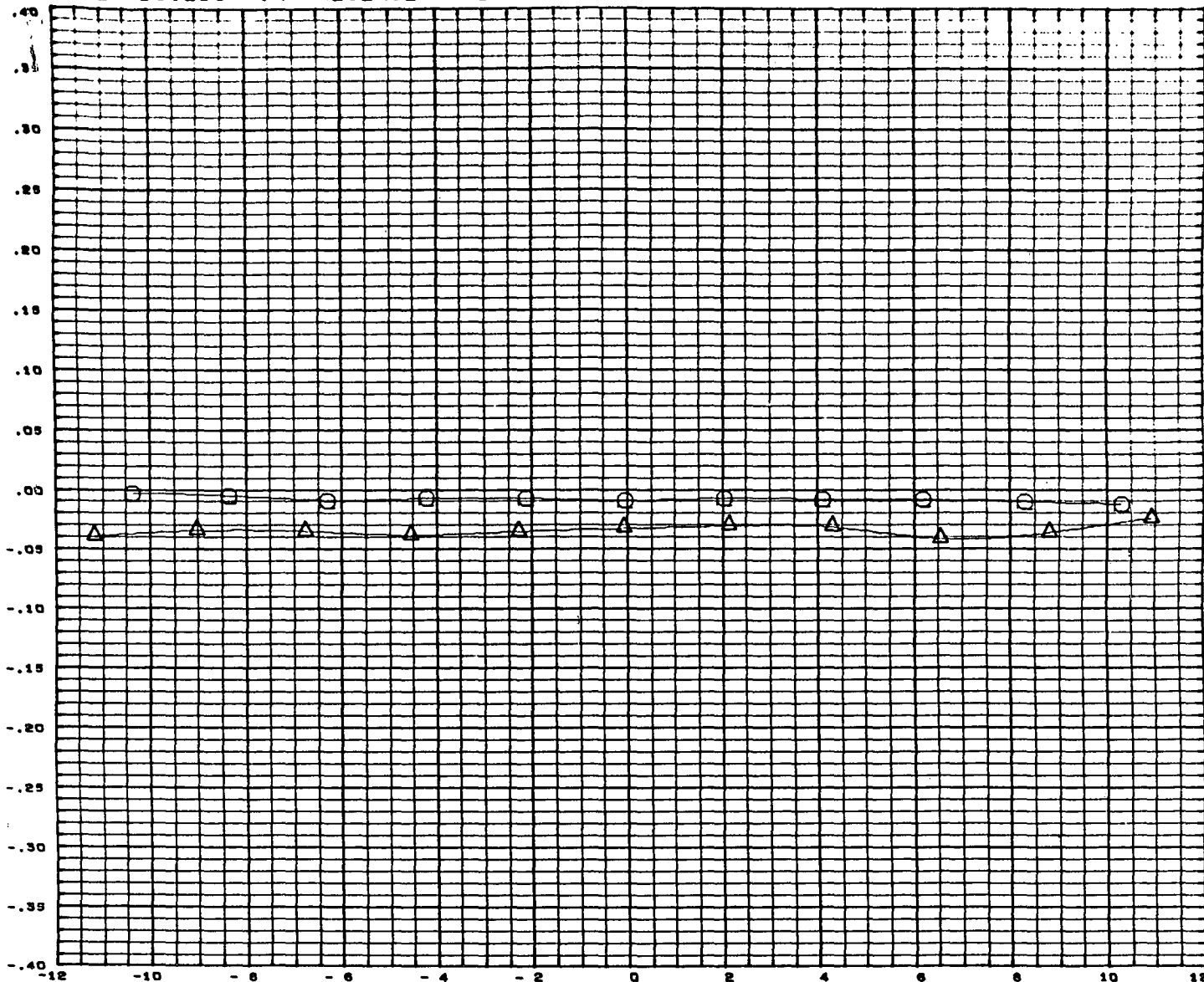
| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.999

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAMP (CTR DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



ANGLE OF ATTACK, ALPHA, DEGREES

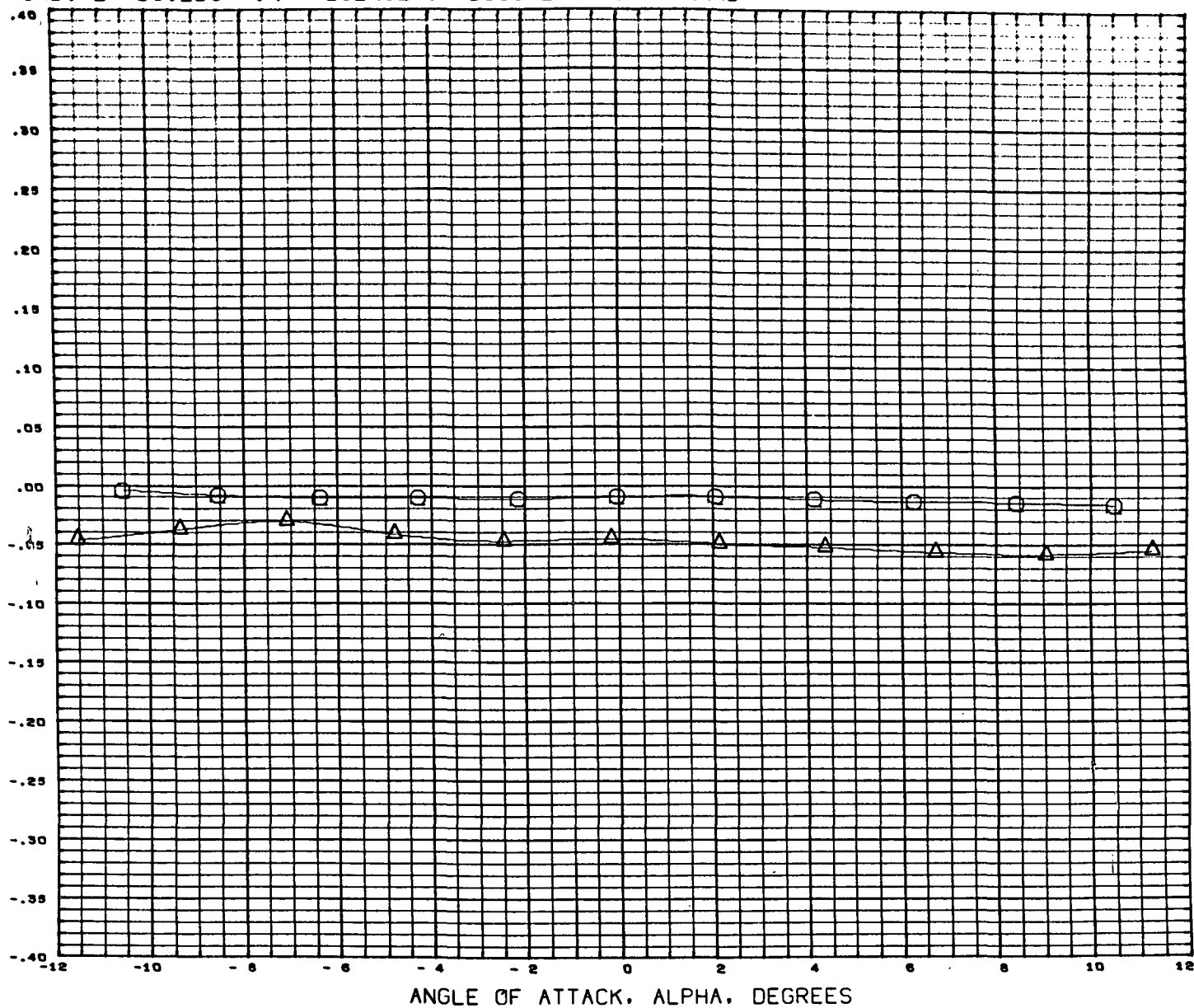
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|-----------------|--------------------------------------|
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| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.895

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLIMATE (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

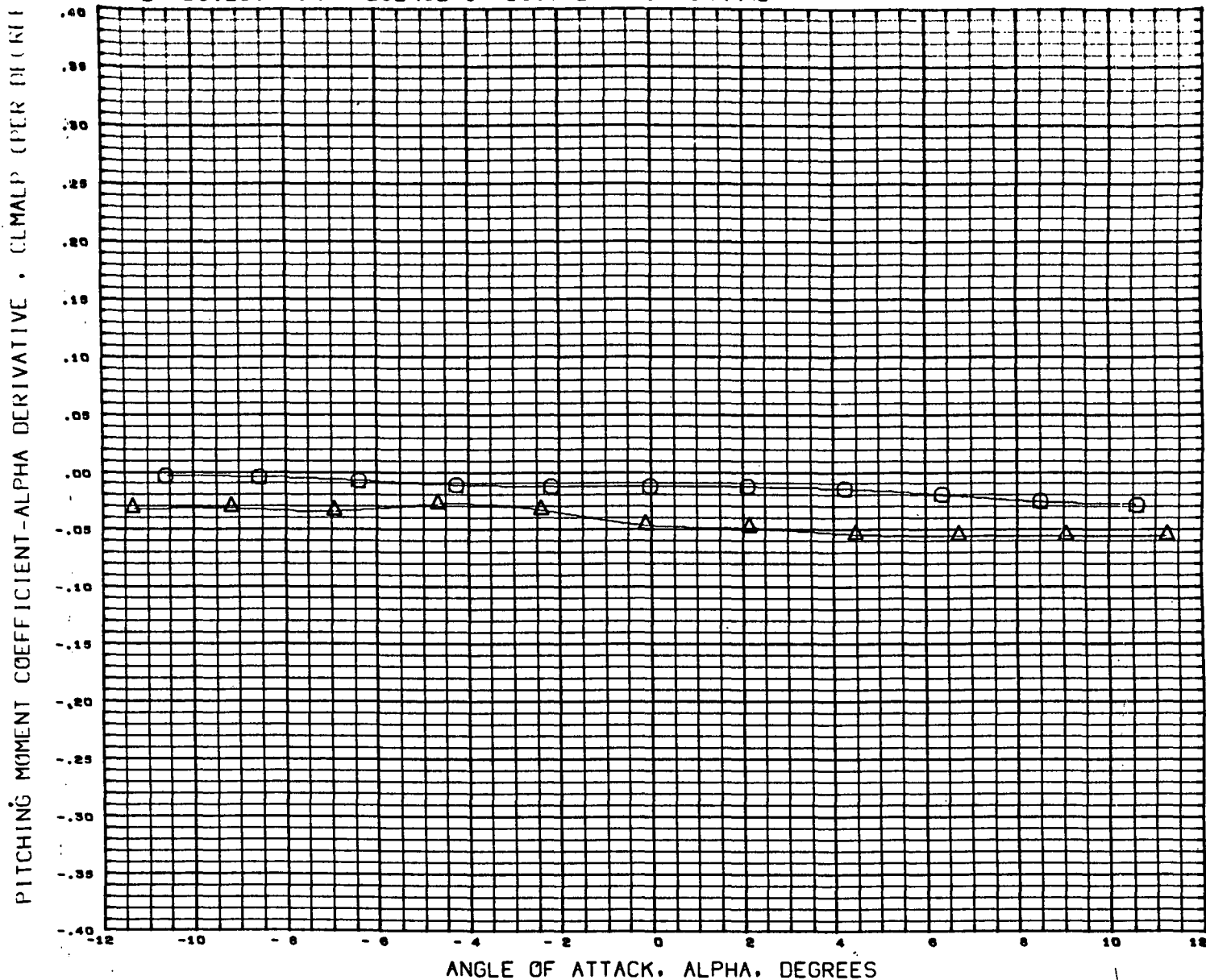


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRF | 0.0000 |
| | | | | YMRF | 0.0000 |
| | | | | ZMRF | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+B5W17V17 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.466

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
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| (13215A) | MSFC490 NR/GD LAUNCH B20C4B+85W17V17 |

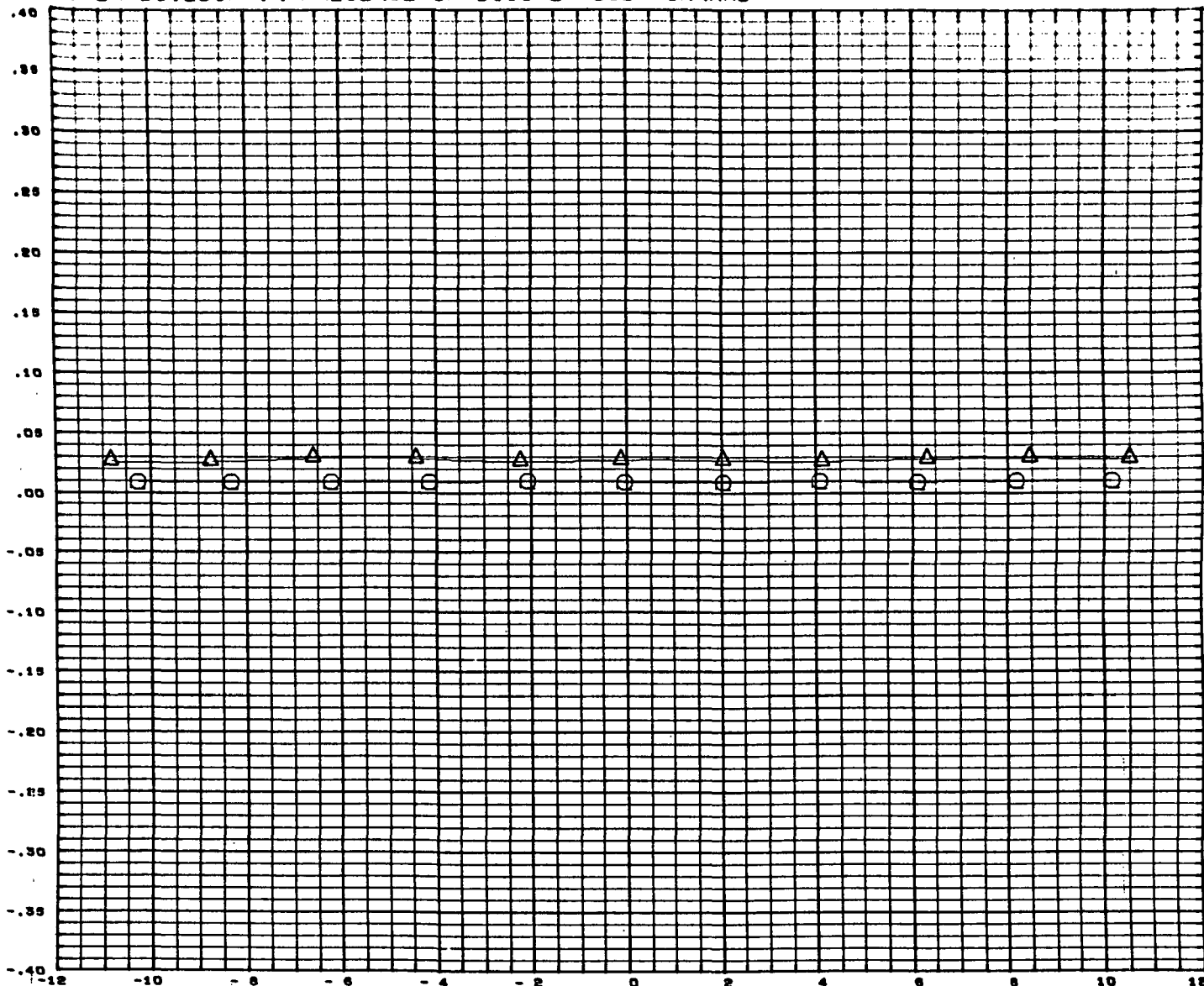
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|-------|--------|--------|--------|
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| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.955

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CANARD (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (13215A) MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.999

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CANARD (PER DEGREE)

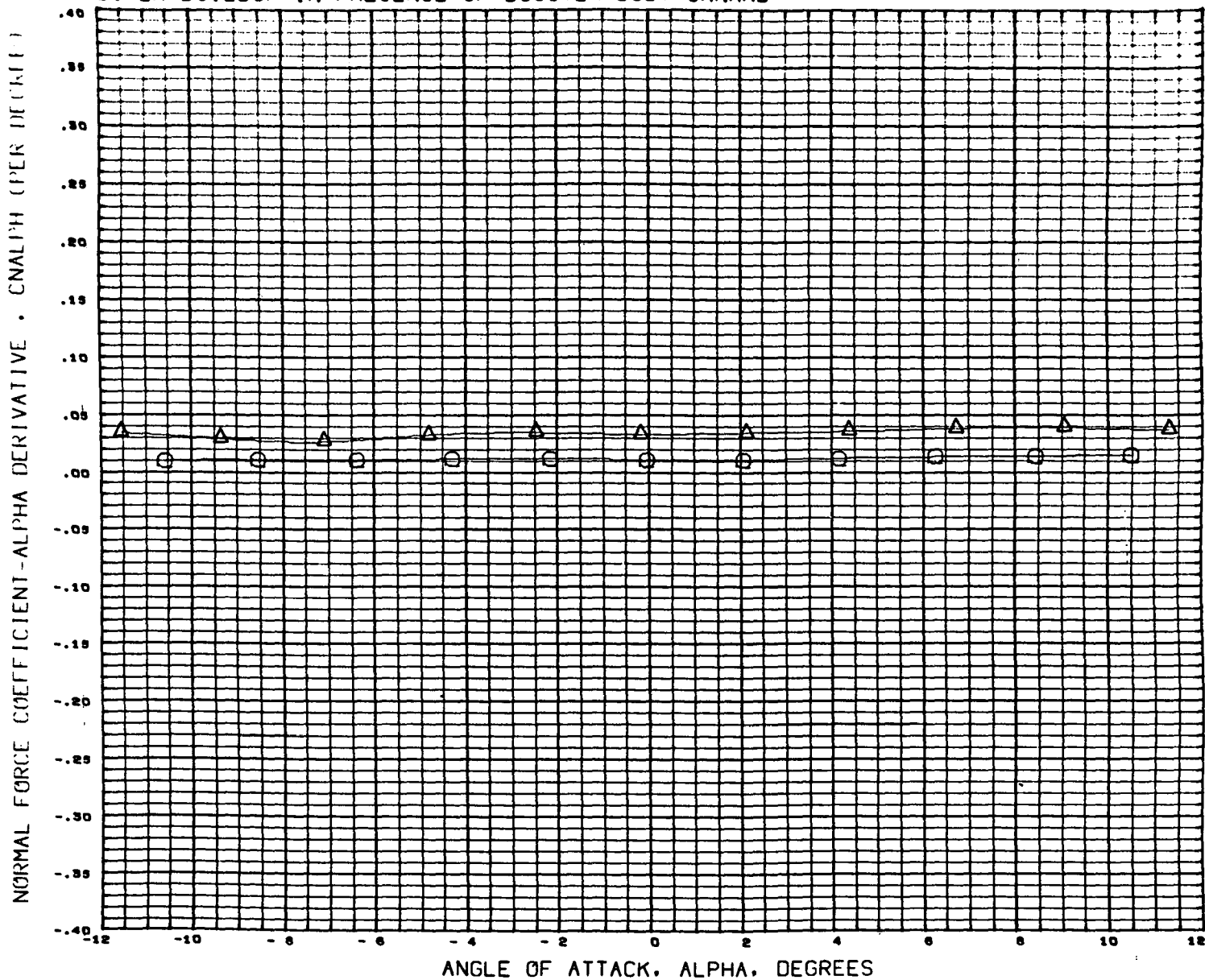


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRF | 0.0000 |
| | | | | YMRF | 0.0000 |
| | | | | ZMRF | 0.0000 |
| | | | | SCALE | 0.0039 SCALE |

MACH 0.695

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13212A) MSFC490 NR/GD LAUNCH B20C48+B5
 (13215A) MSFC490 NR/GD LAUNCH B20C48+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRF | 0.0000 |
| | | | | YMRF | 0.0000 |
| | | | | ZMRF | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD



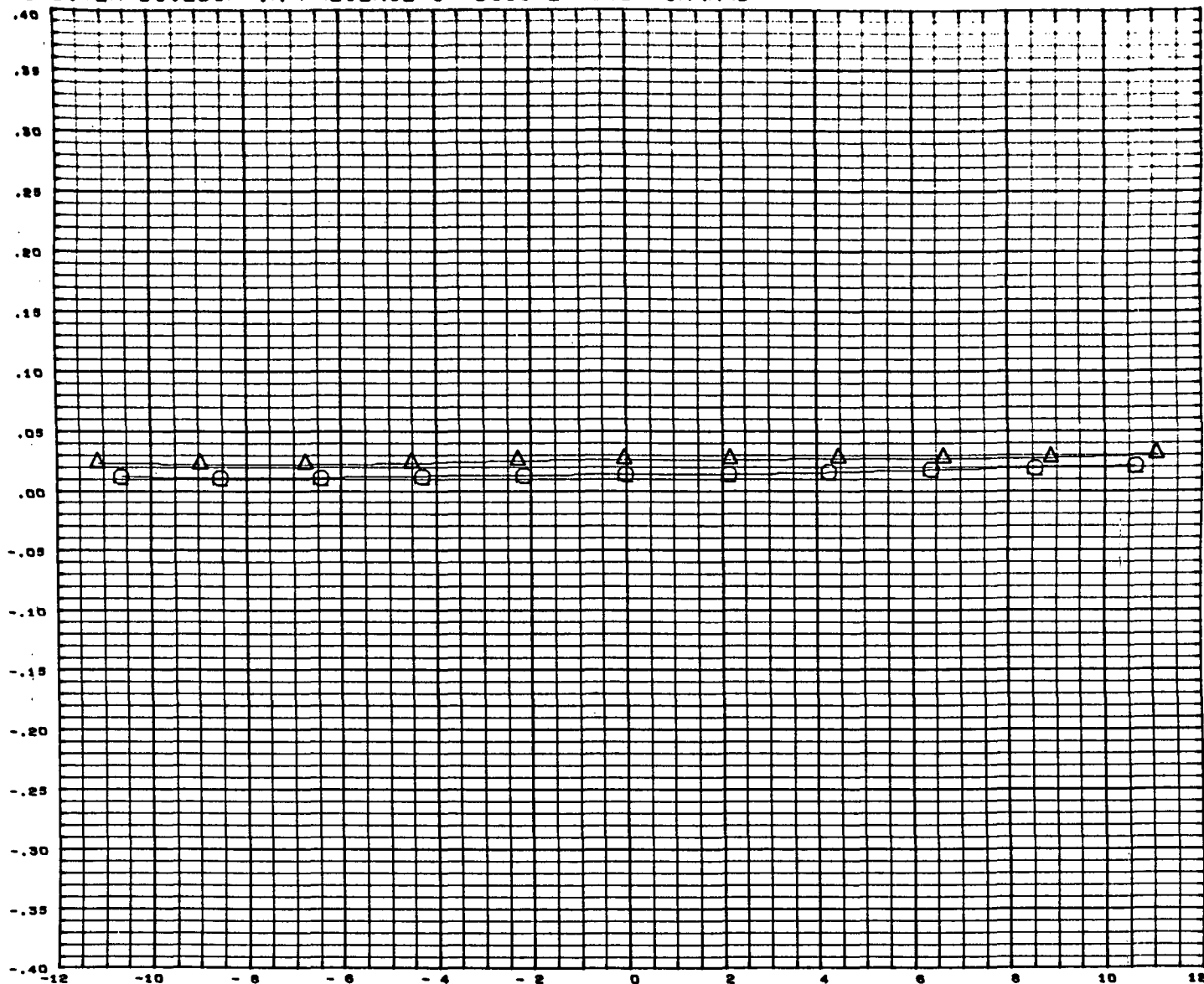
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (13215A) △ MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.466

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CANARD UP (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
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| (13215A) | MSFC490 NR/GD LAUNCH B20C48+B5W17V17 |

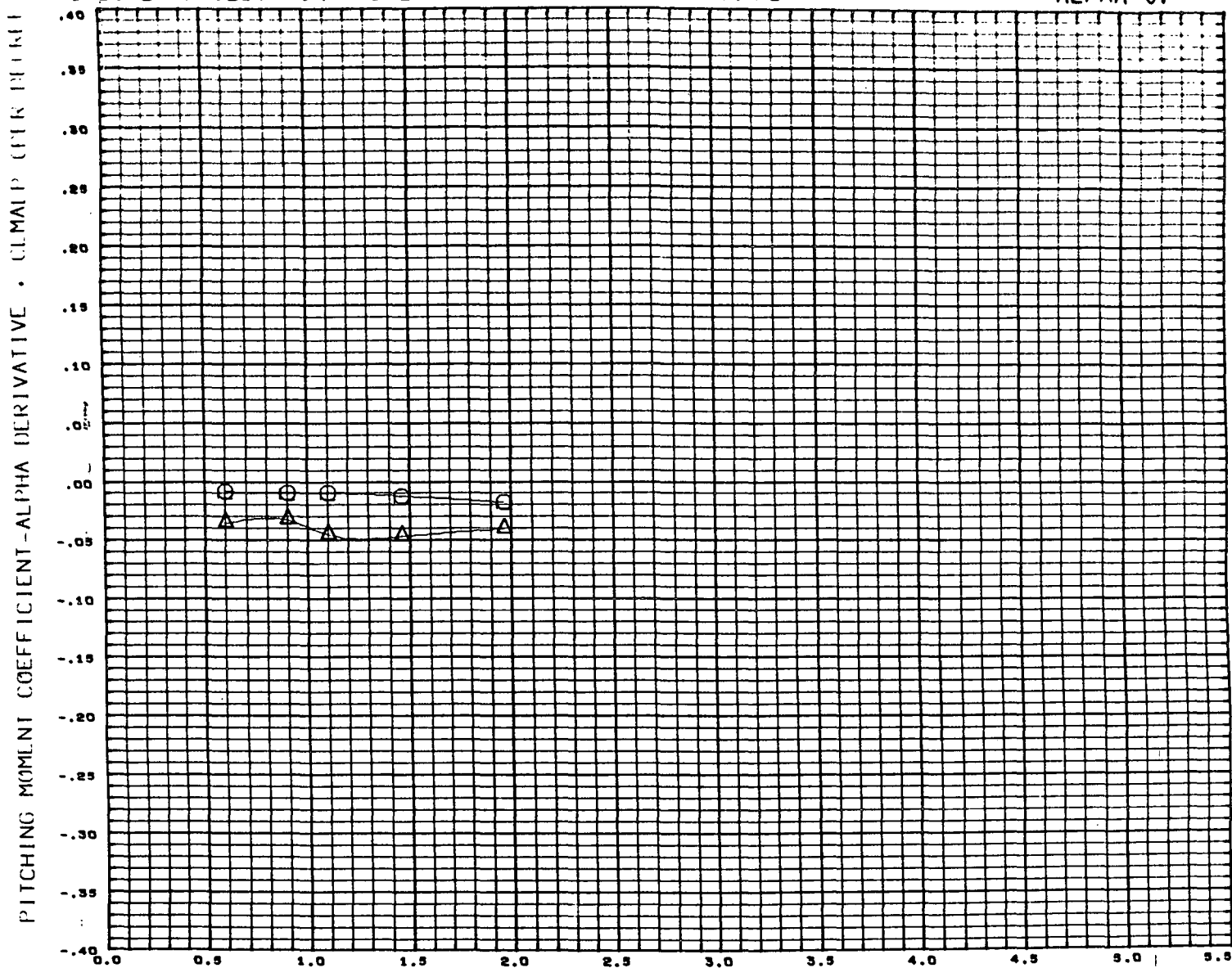
| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
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| 0.000 | 0.000 | 0.000 | 1.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.955

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

ALPHA=0.



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (J3215A) MSFC490 NR/GD LAUNCH B20C4B+B3W17V17

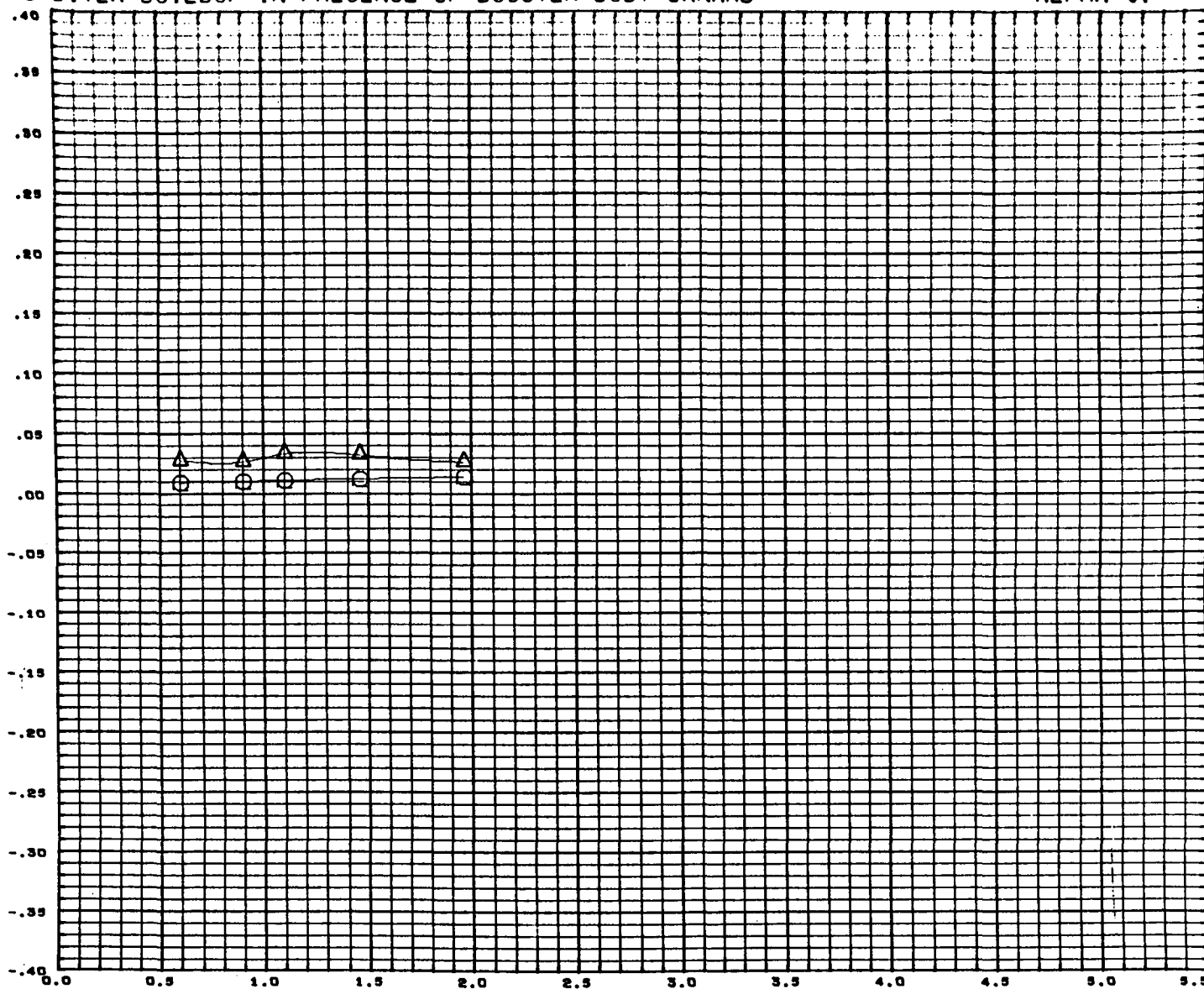
| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

ALPHA=0.

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CANALPH (PER DEGREE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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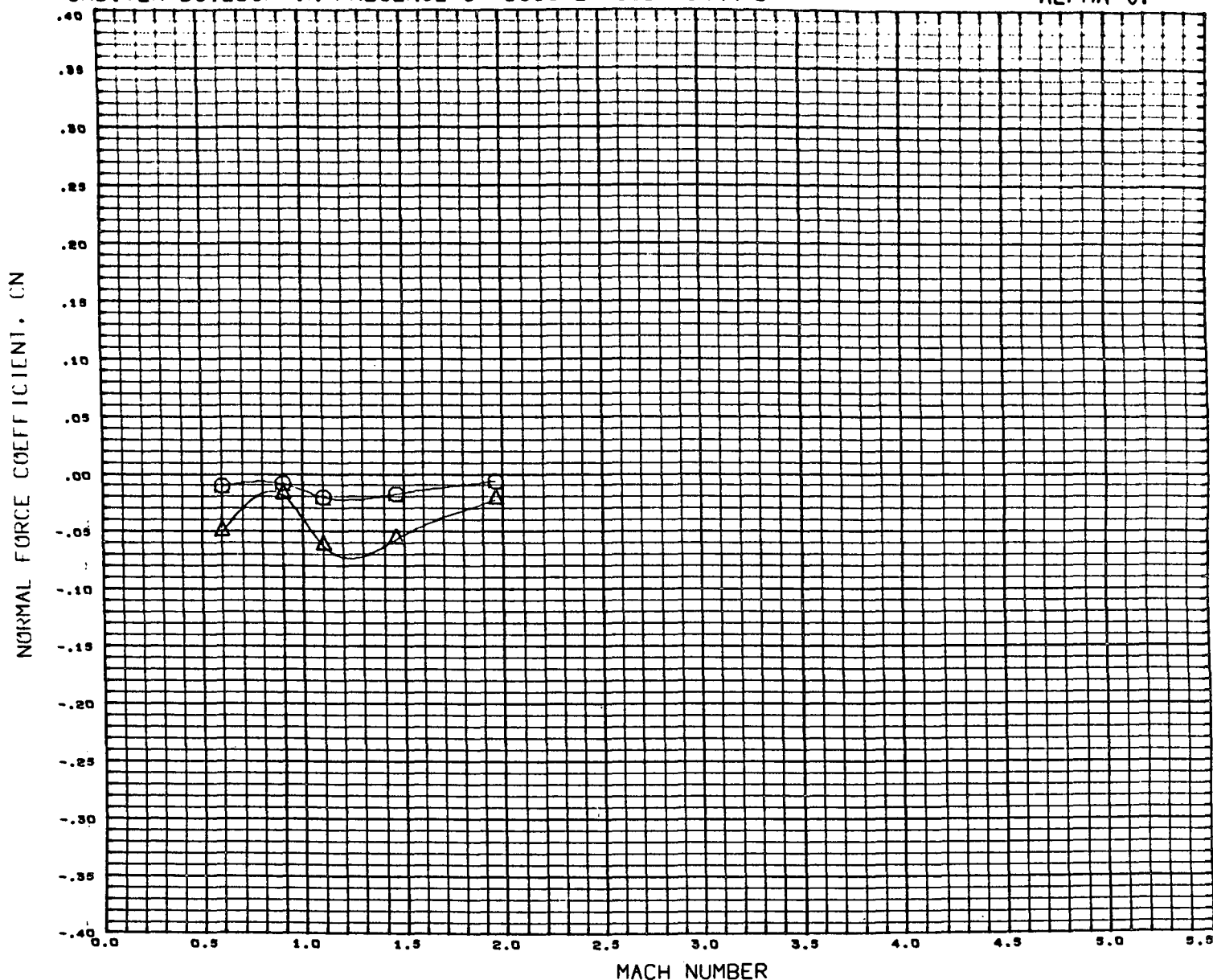
MACH NUMBER

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

ALPHA=0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (K3215A) MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6360 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

ALPHA=0.

PITCHING MOMENT COEFFICIENT, CLM



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (K3215A) MSFC490 NR/GD LAUNCH B20C4B+B5W17V17

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF BOOSTER BODY CANARD

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



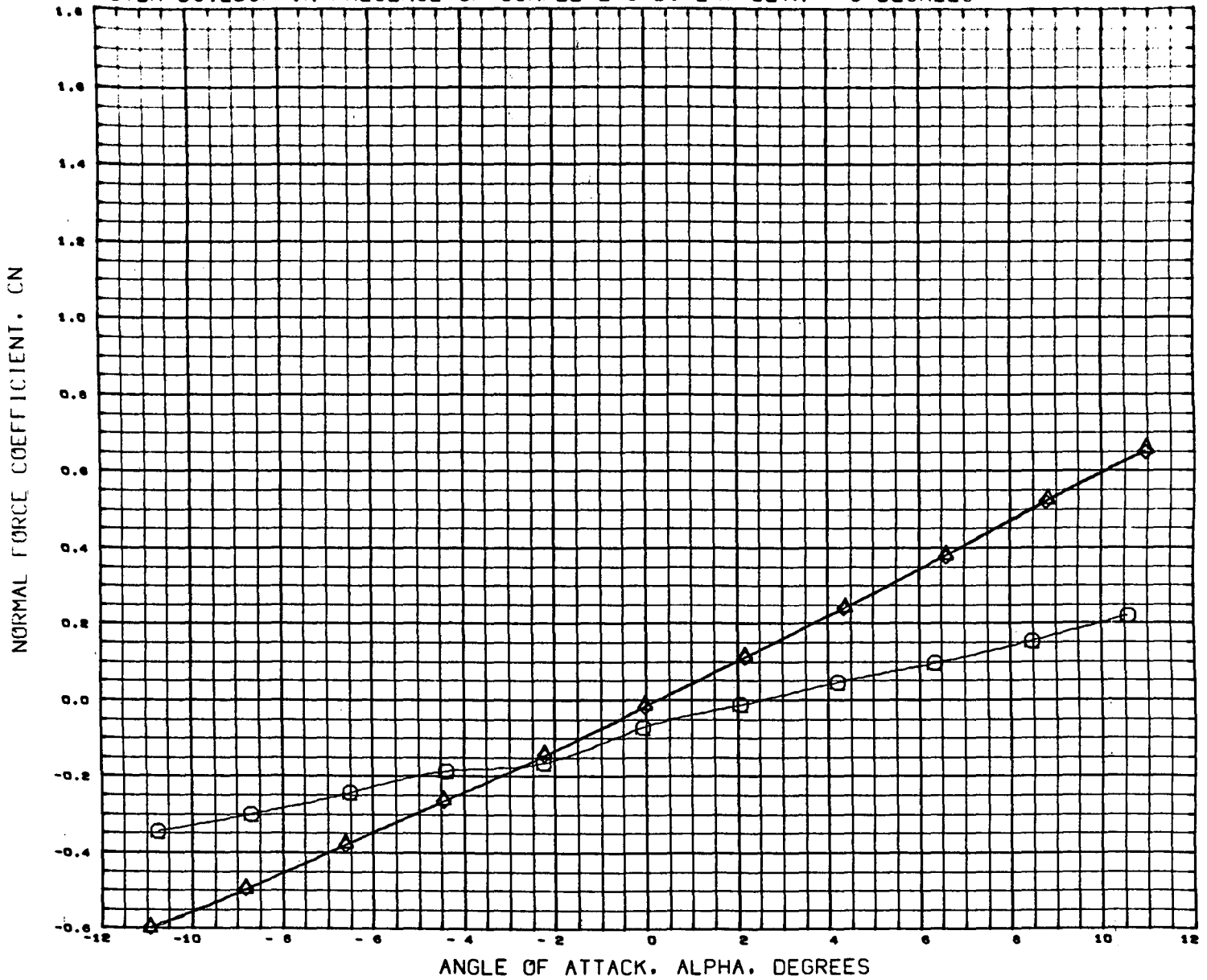
MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------------|
| (K3212A) | MSFC490 NR/GD LAUNCH B20C4B+85 |
| (K3213A) | MSFC490 NR/GD LAUNCH B20C4B+85W17V17 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6360 SQ IN |
| 0.000 | 0.000 | 0.000 | 1.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0950 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



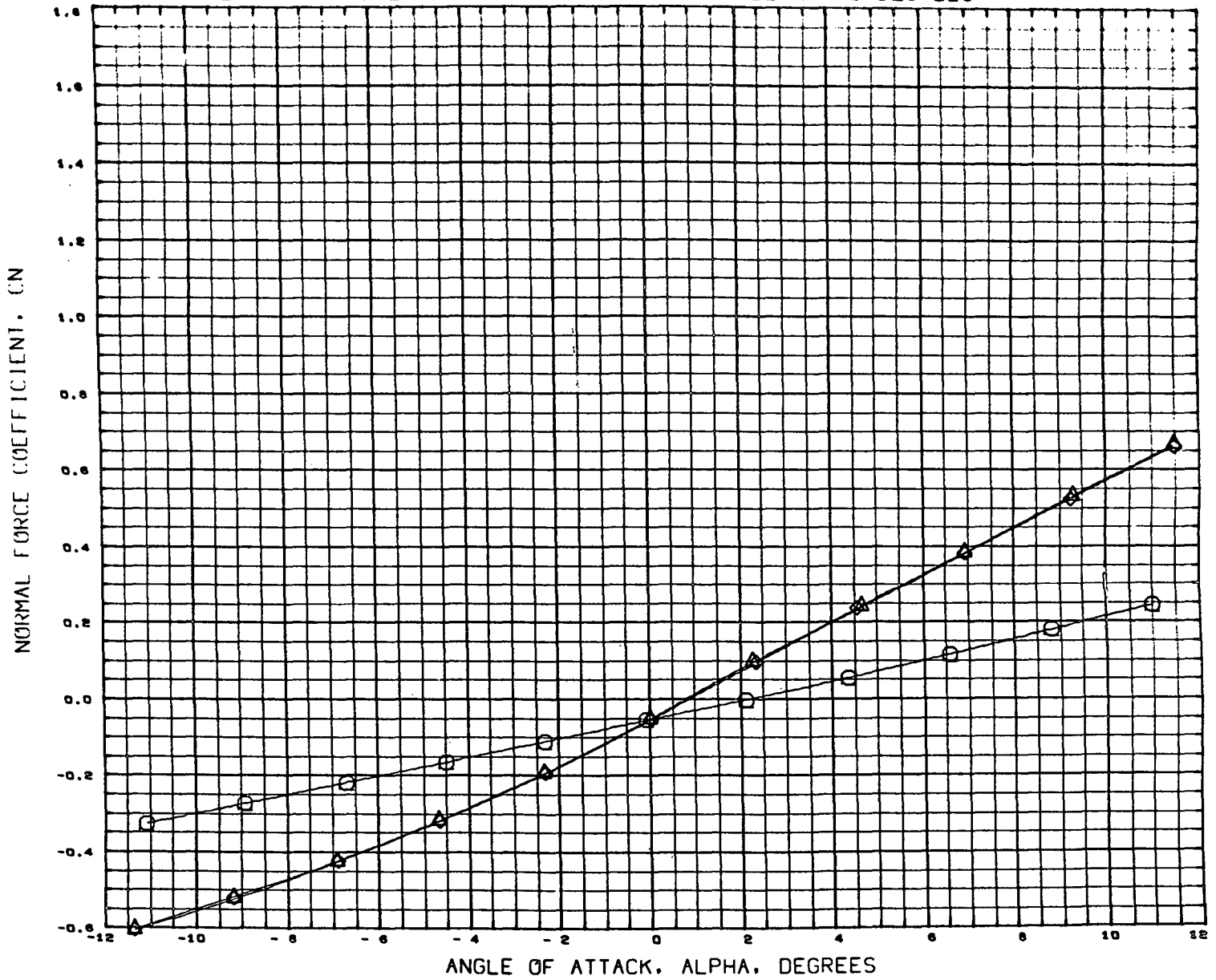
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (I3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVATR | AILRON | ELVORB |
|-------|--------|--------|--------|
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.603

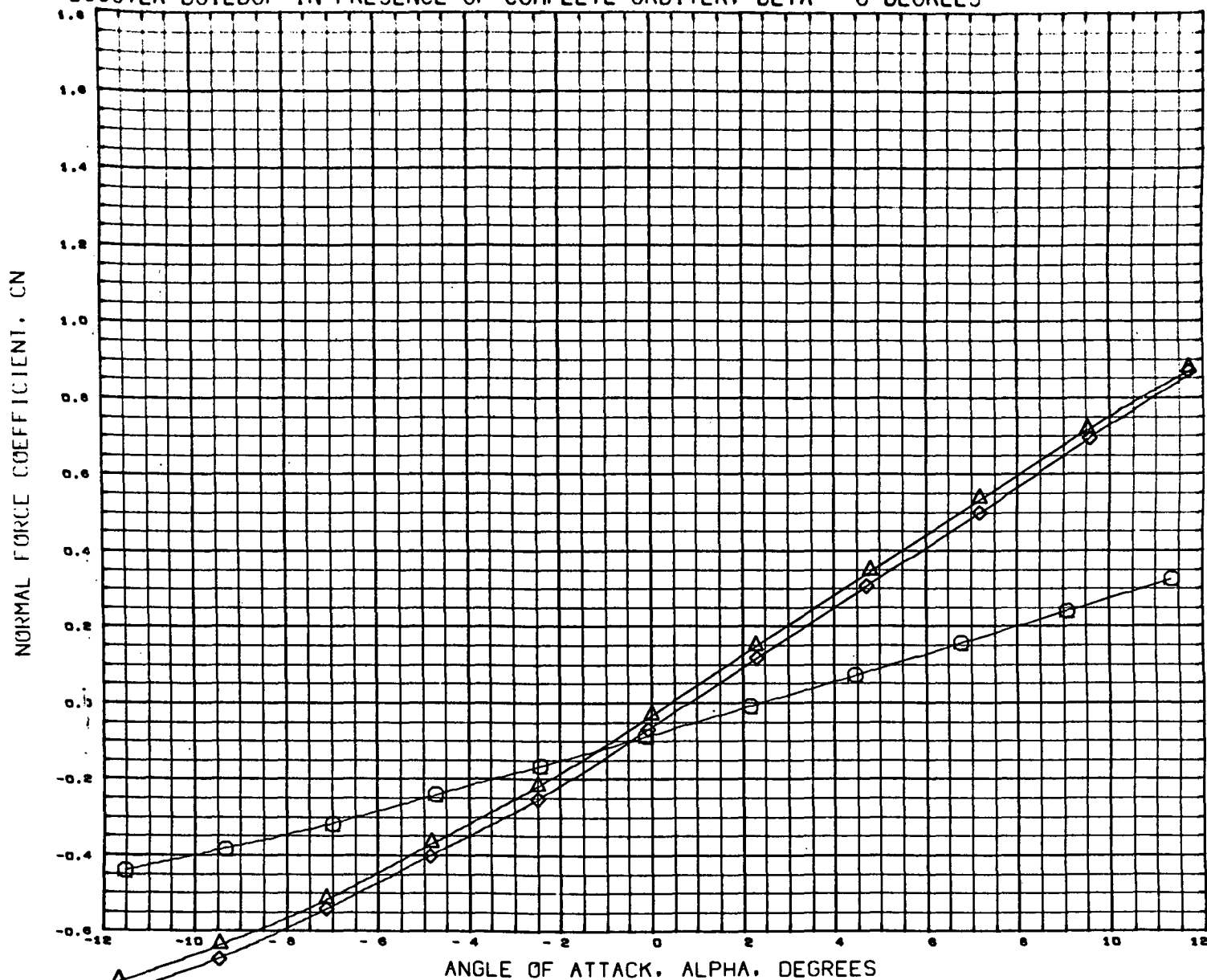
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (H3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0039 SCALE |

MACH 0.902

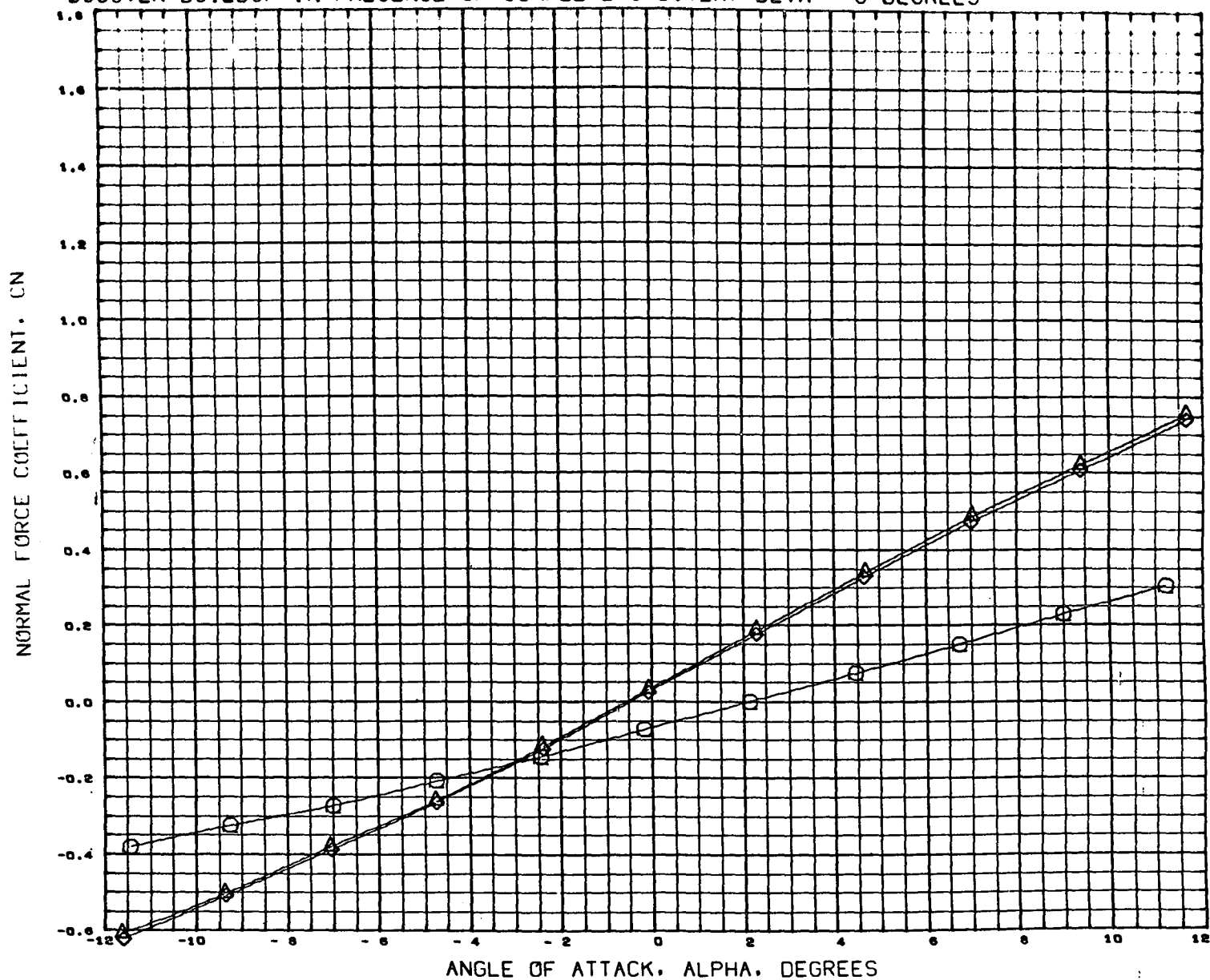
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|----------|--------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | ○ | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | △ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (H3221A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | | XMRP | 0.0000 |
| | | | | | | | YMRP | 0.0000 |
| | | | | | | | ZMRP | 0.0000 |
| | | | | | | | SCALE | 0.0035 SCALE |

MACH 1.106

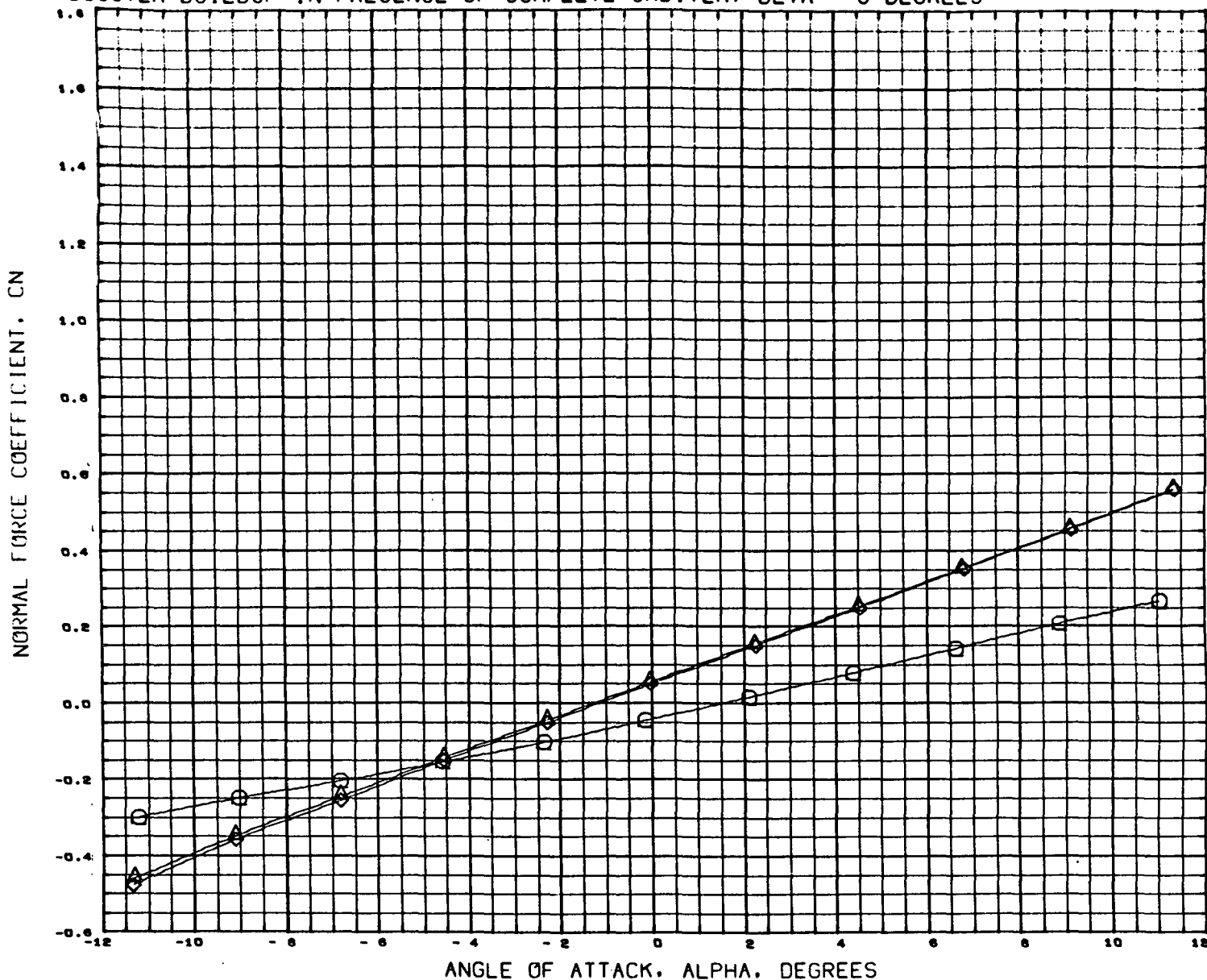
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ATLRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (H3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.455

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

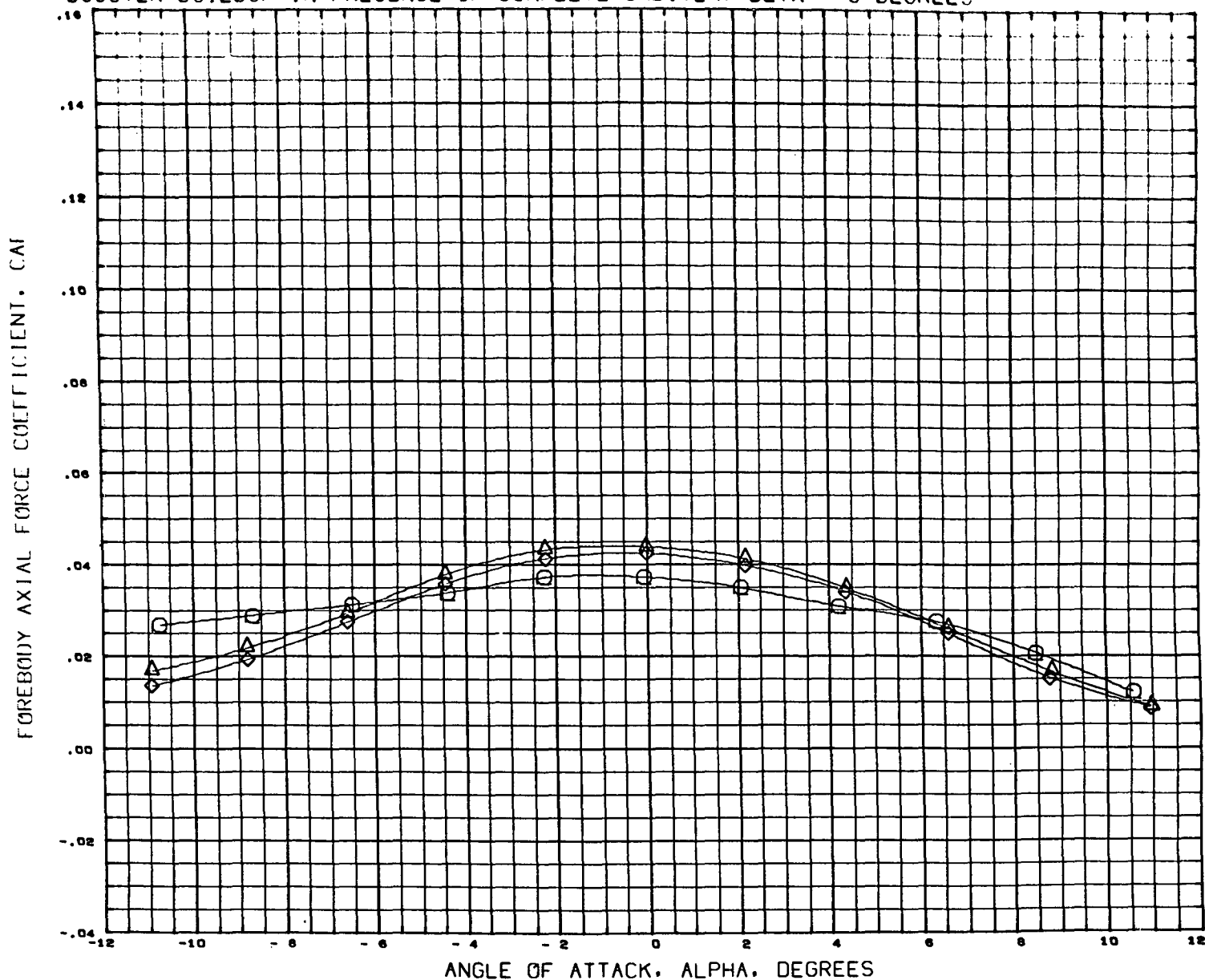


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3220A) ○ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (H3219A) △ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (13221A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 6.000 | | | 0.000 | SREF 15.6560 SQ IN |
| 6.000 | 0.000 | 0.000 | 0.000 | LREF 3.0950 INCHES |
| 6.000 | 0.000 | 0.000 | 0.000 | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.968

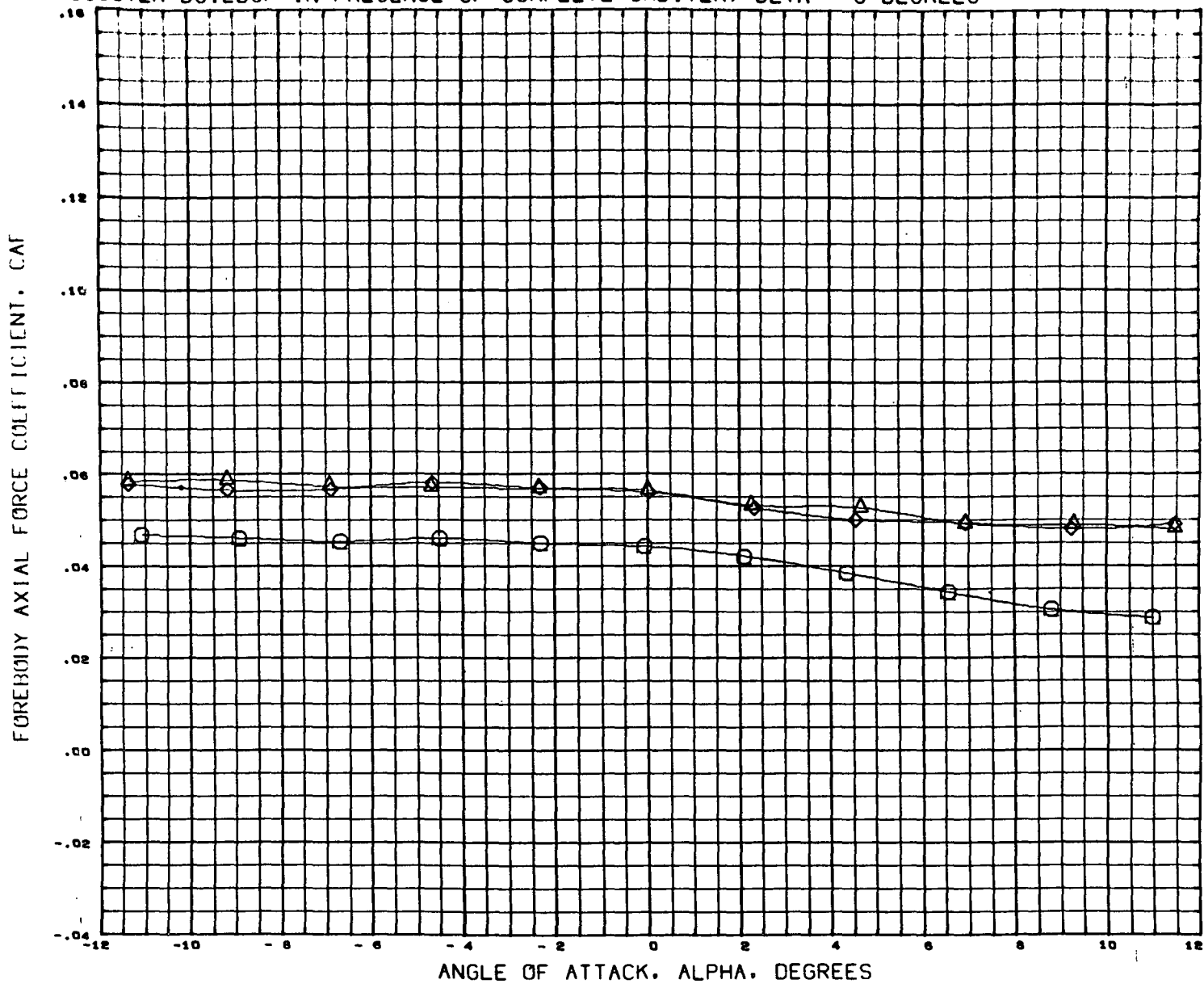
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6360 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (H3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
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| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.603

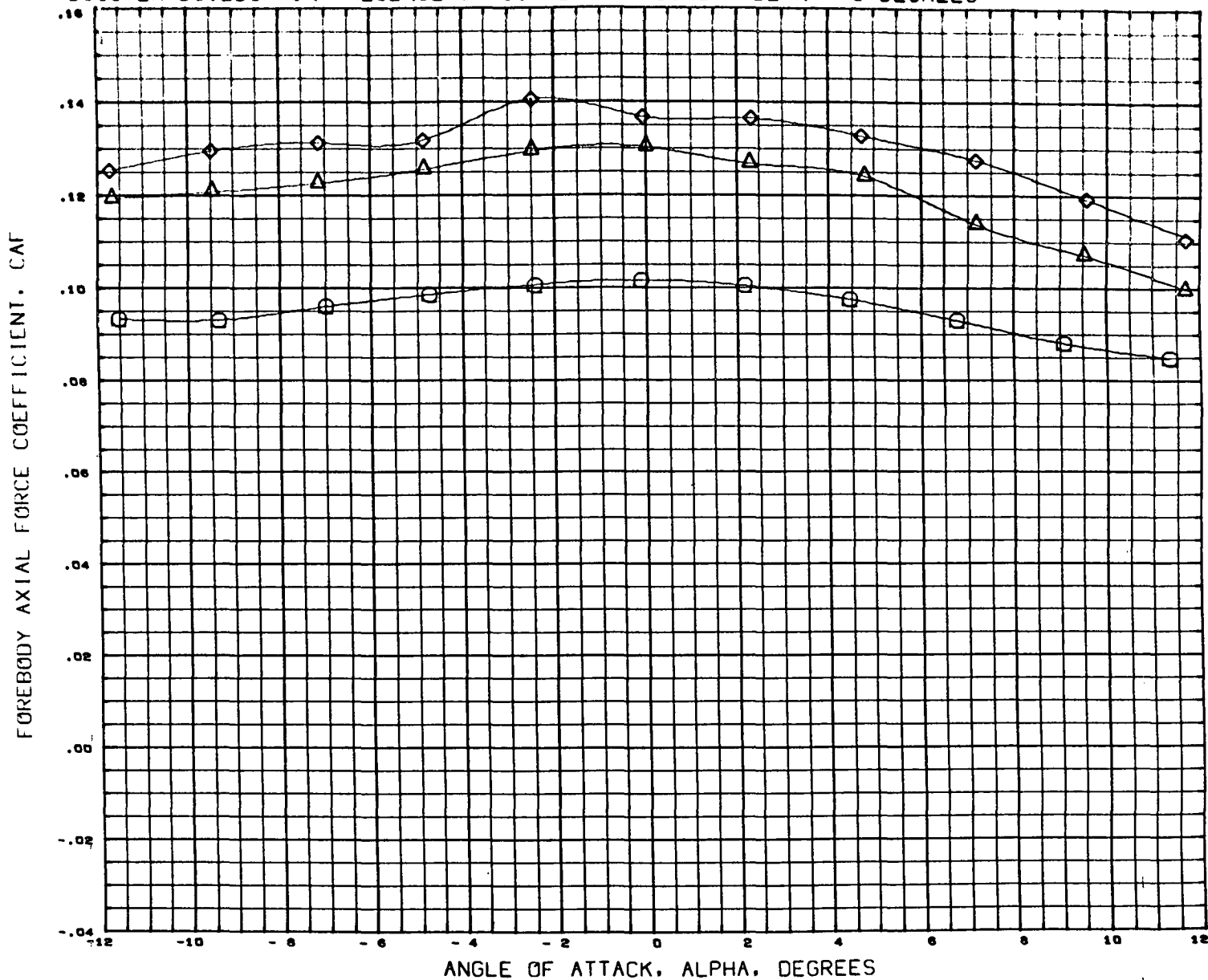
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C48W14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (13221A) | MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.902

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

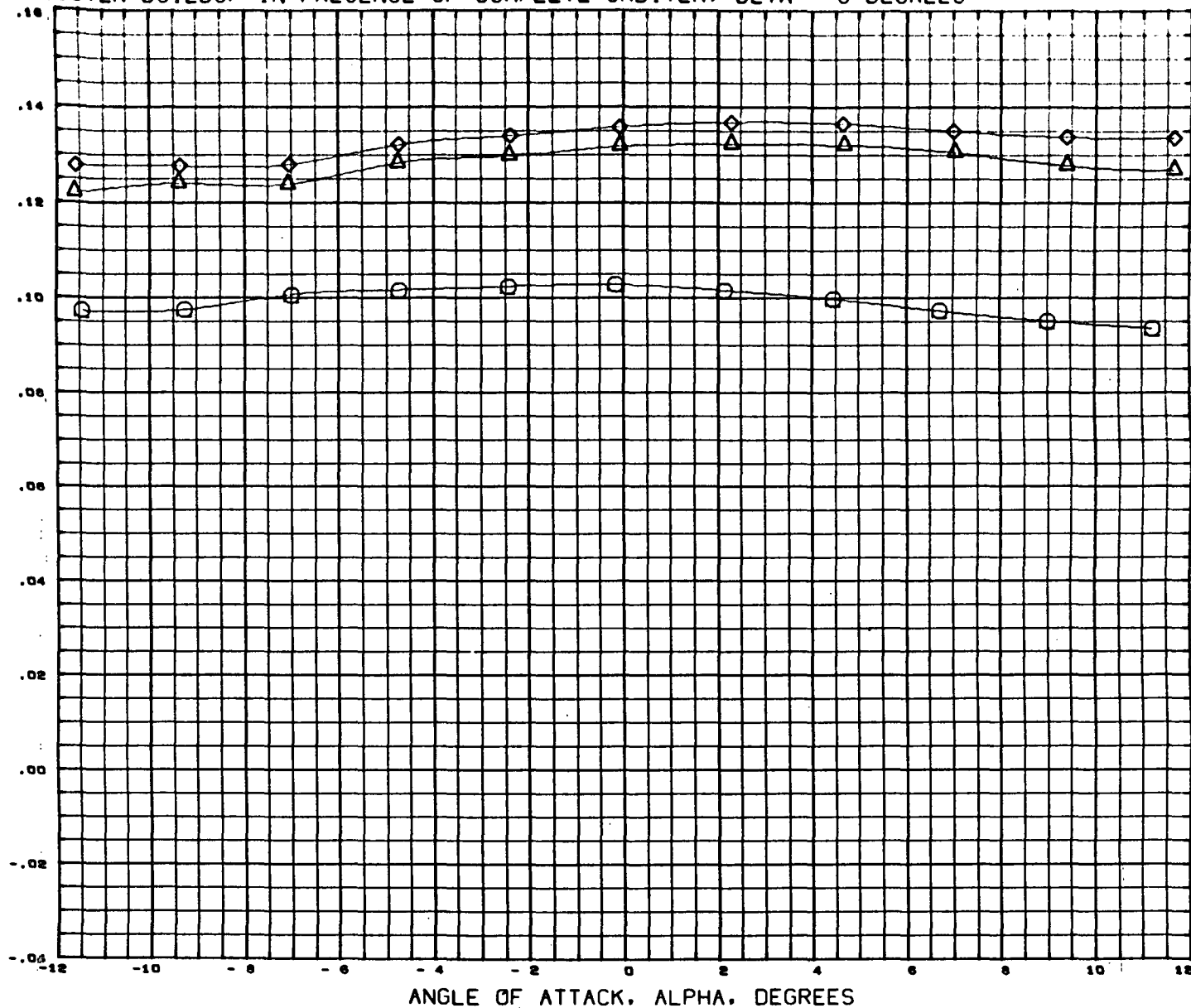


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6360 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (H3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.106

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER. BETA = 6 DEGREES

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}

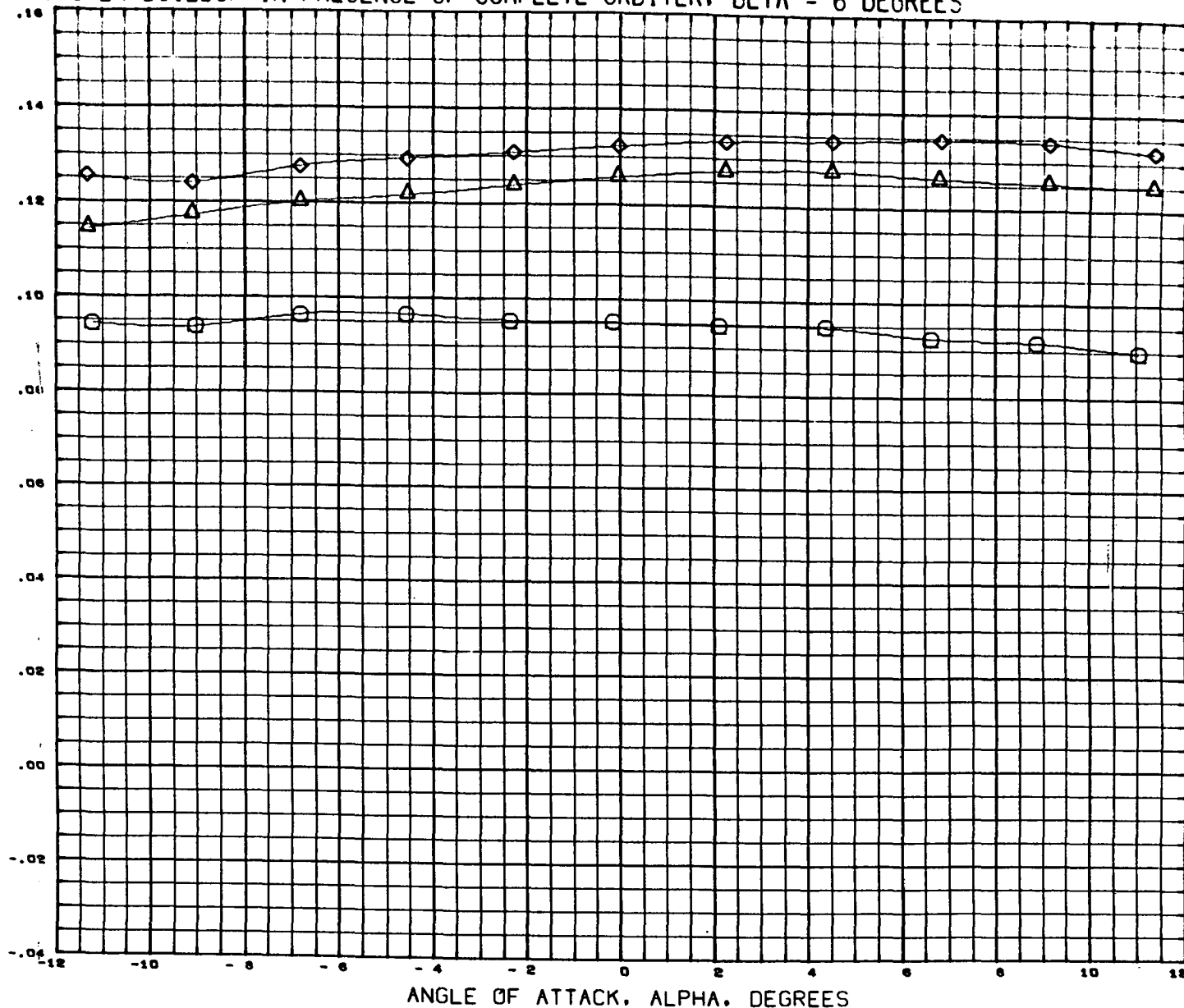


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (H3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.455

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

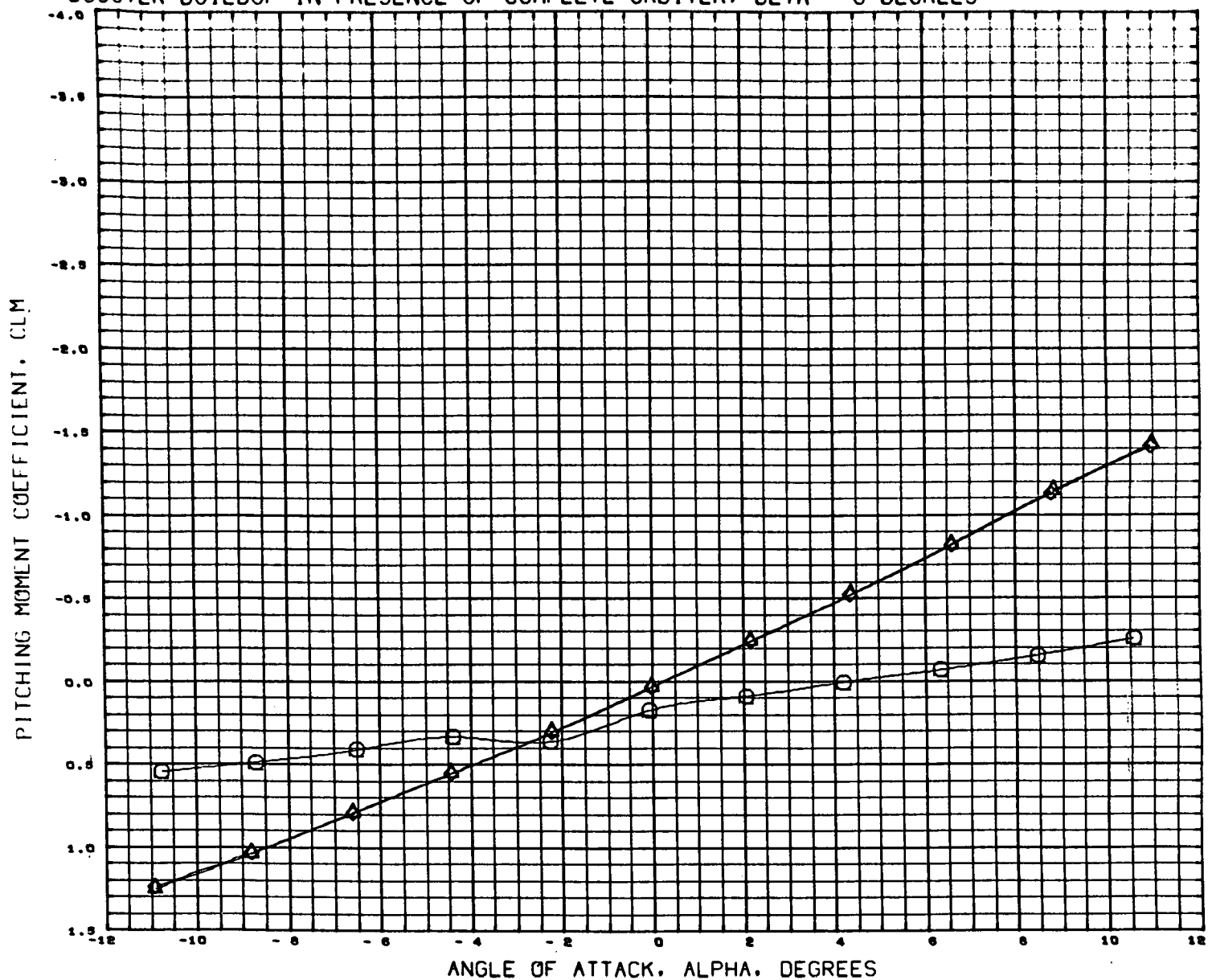
FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (H3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.968

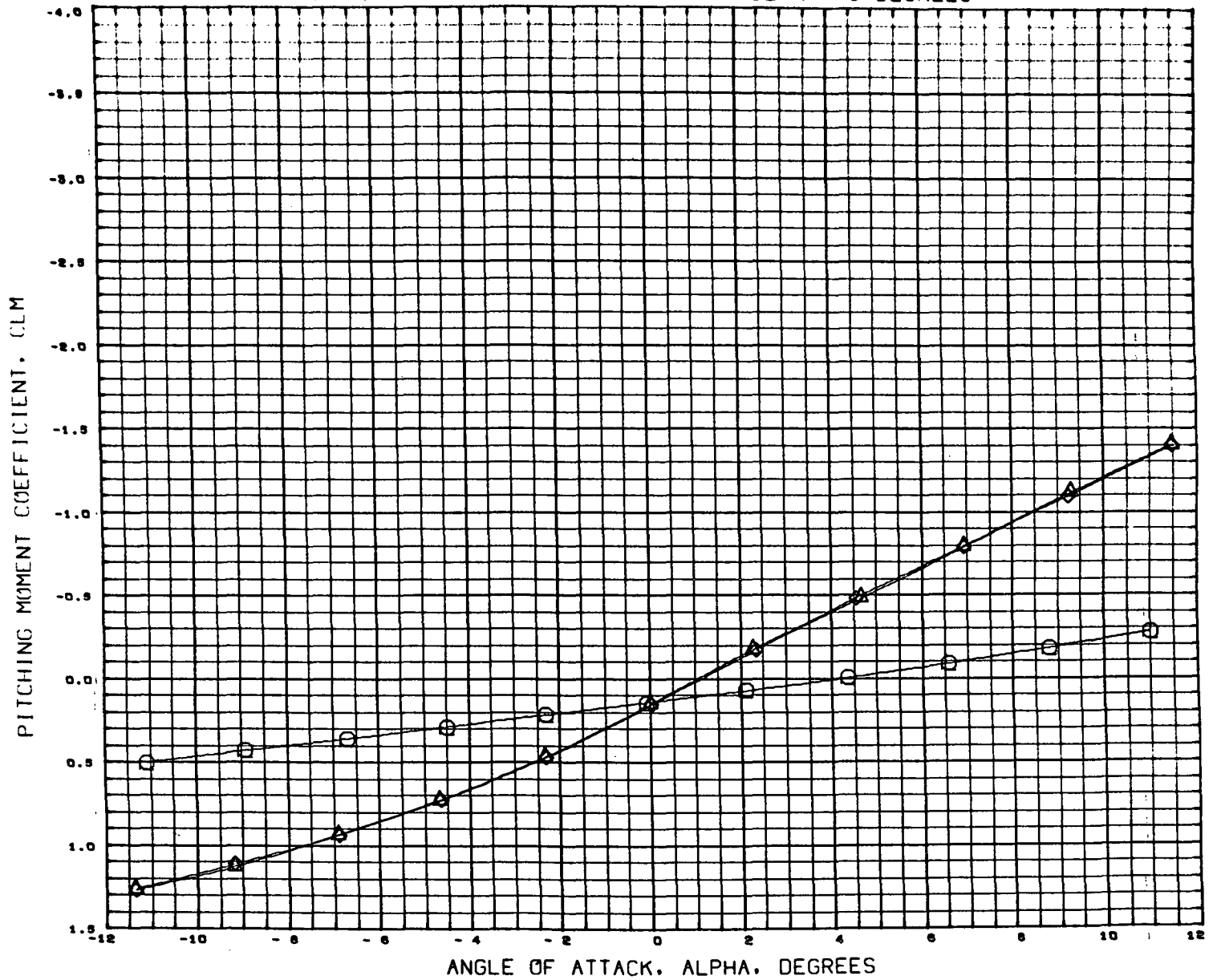
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------|--------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 | SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 | INCHES |
| (I3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 0.603

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



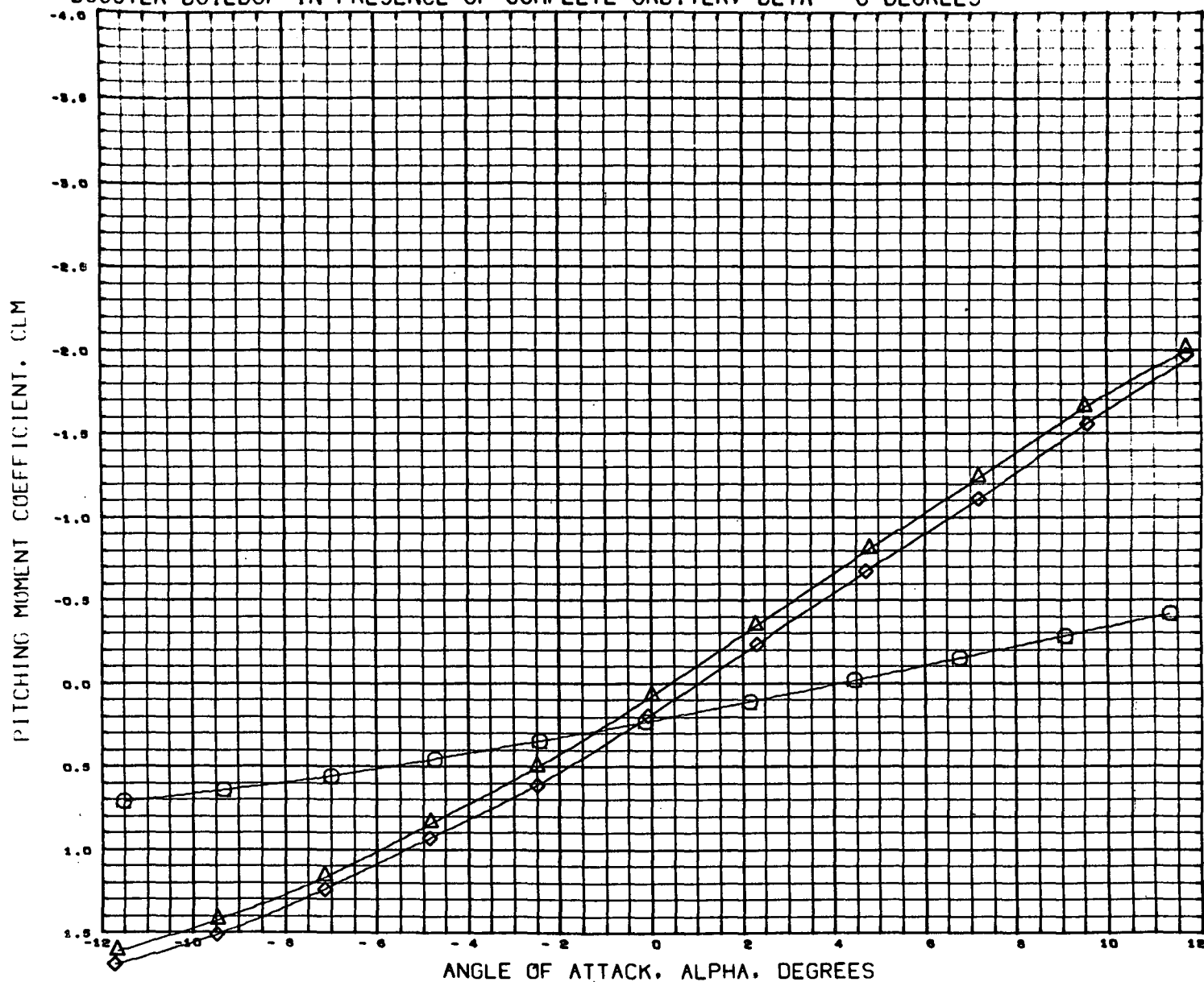
| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|----------|--------|---|
| (H3220A) | ○ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (H3219A) | △ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (H3221A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVATR | ATLRON | ELVOR8 |
|-------|--------|--------|--------|
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.902

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



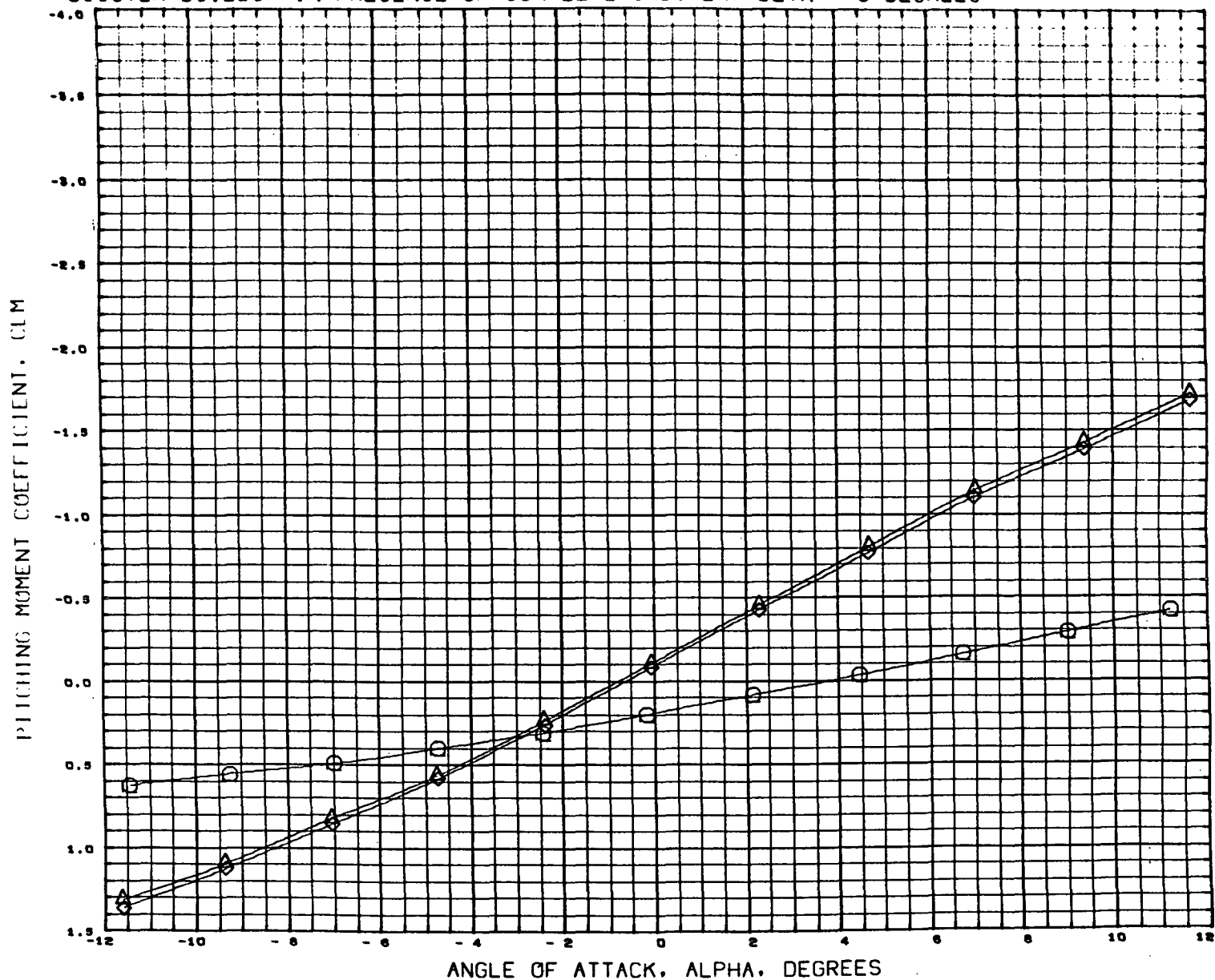
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3220A) ○ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (H3219A) △ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (I3221A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVATR | AILRON | ELVORB |
|-------|--------|--------|--------|
| 6.000 | | | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
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| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.106

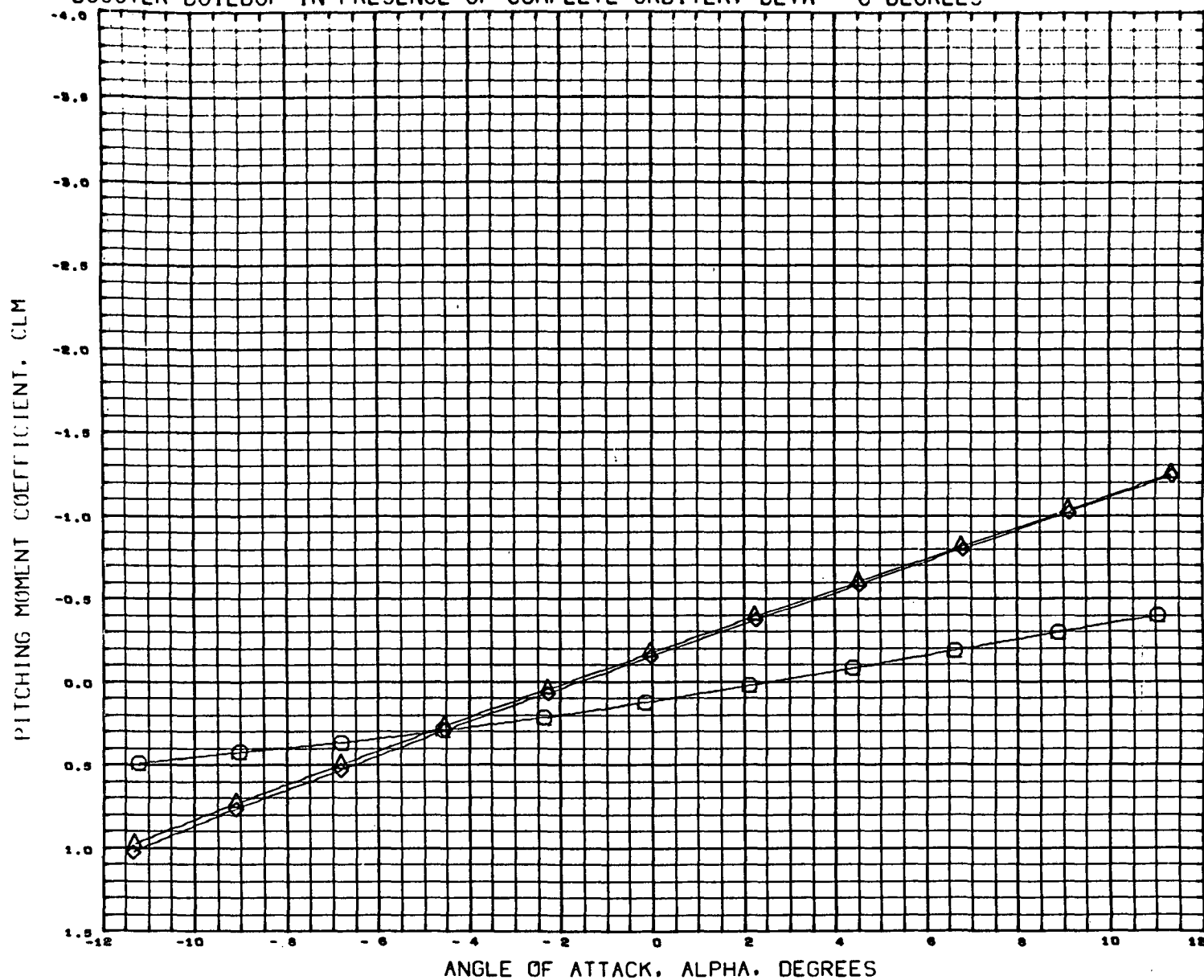
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (I3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
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| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.455

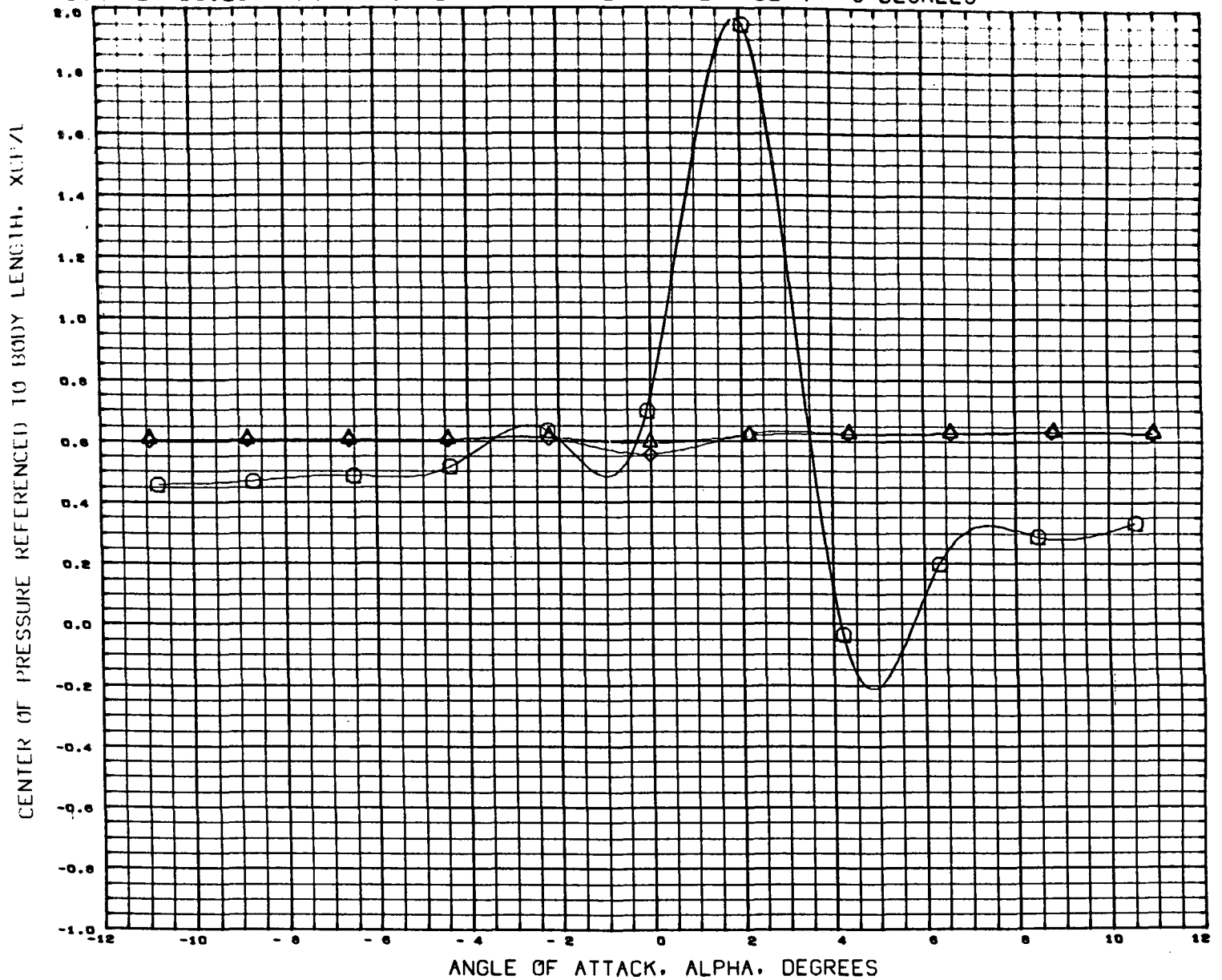
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C48W14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (I3221A) | MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.968

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

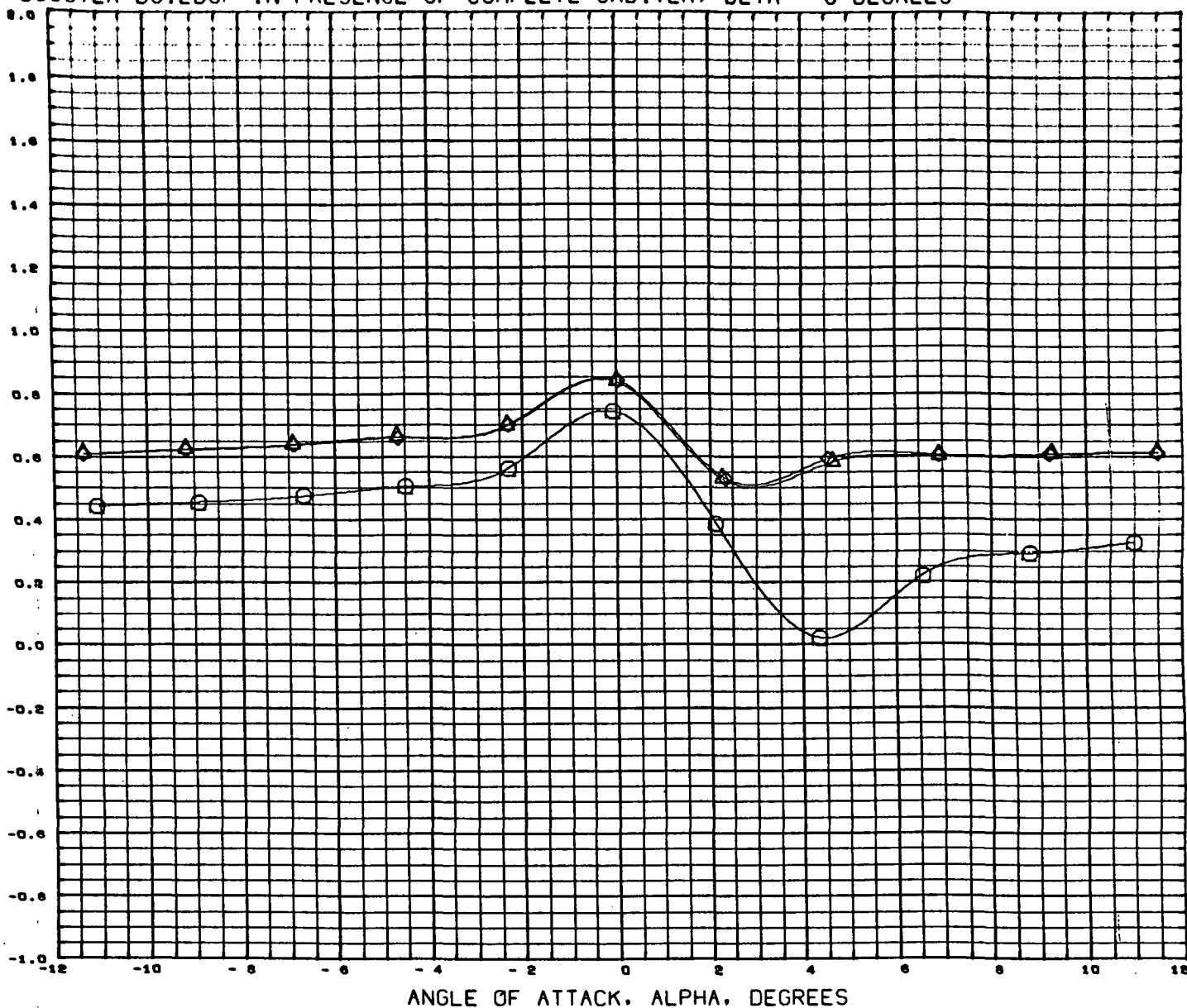


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (I3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.603

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

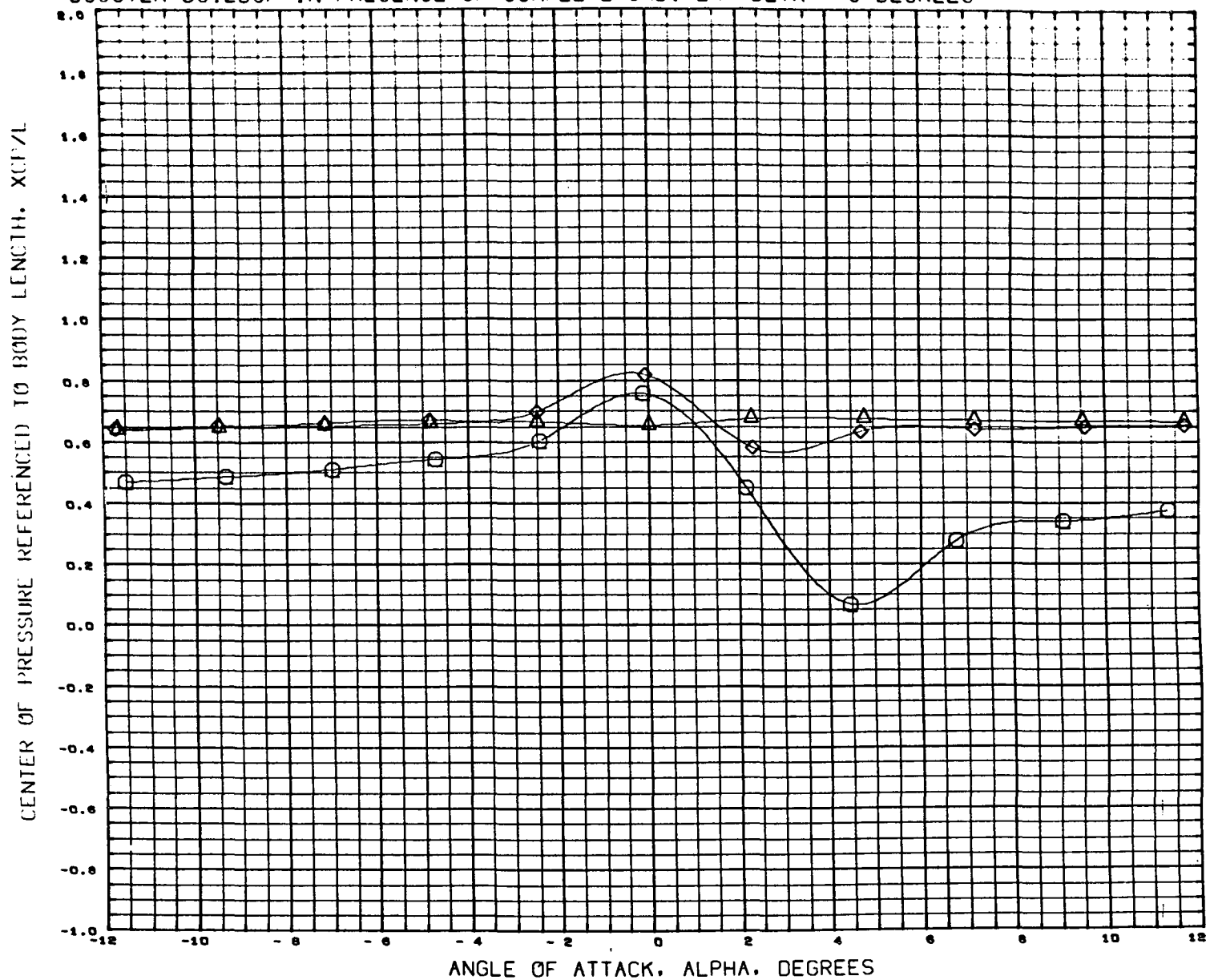
CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (H3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.902

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



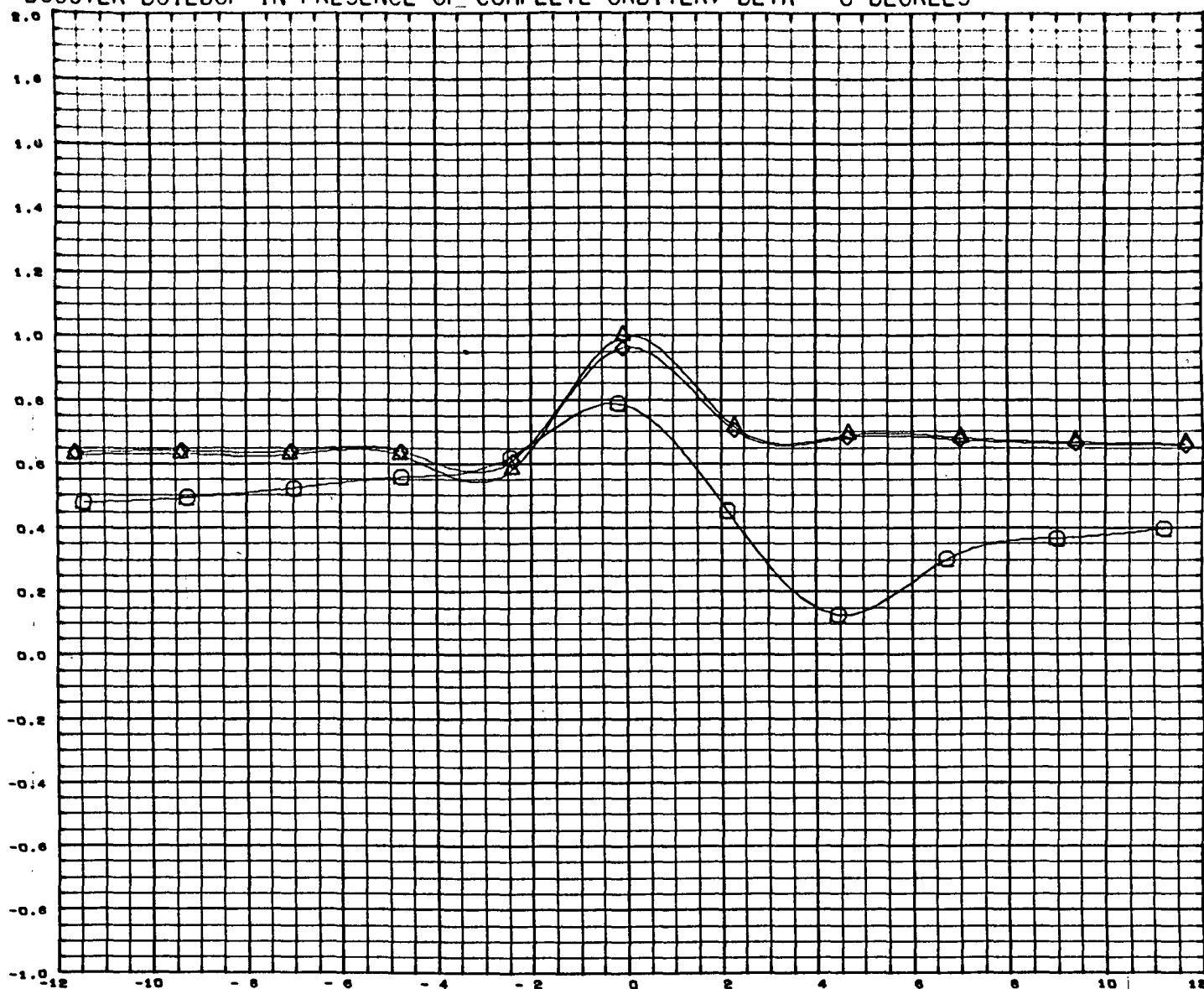
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
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| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (H3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 6.000 | 0.000 | 0.000 | 0.000 | SREF | 19.6560 SQ IN |
| 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.106

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



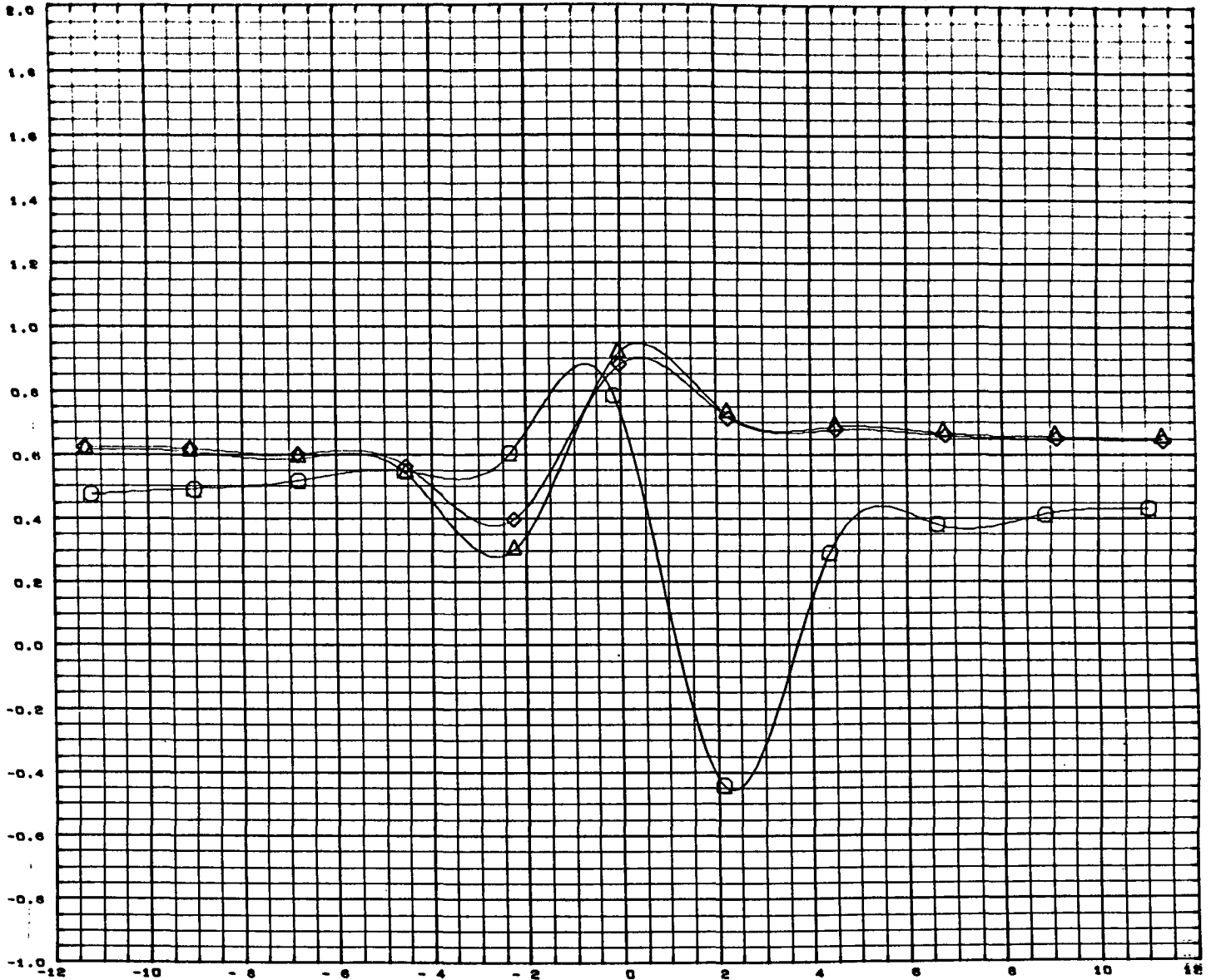
ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|----------|--------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | ○ | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 19.6560 SQ IN |
| (H3219A) | △ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (H3221A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | | XMRP | 0.0000 |
| | | | | | | | YMRP | 0.0000 |
| | | | | | | | ZMRP | 0.0000 |
| | | | | | | | SCALE | 0.0035 SCALE |

MACH 1.455

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



ANGLE OF ATTACK, ALPHA, DEGREES

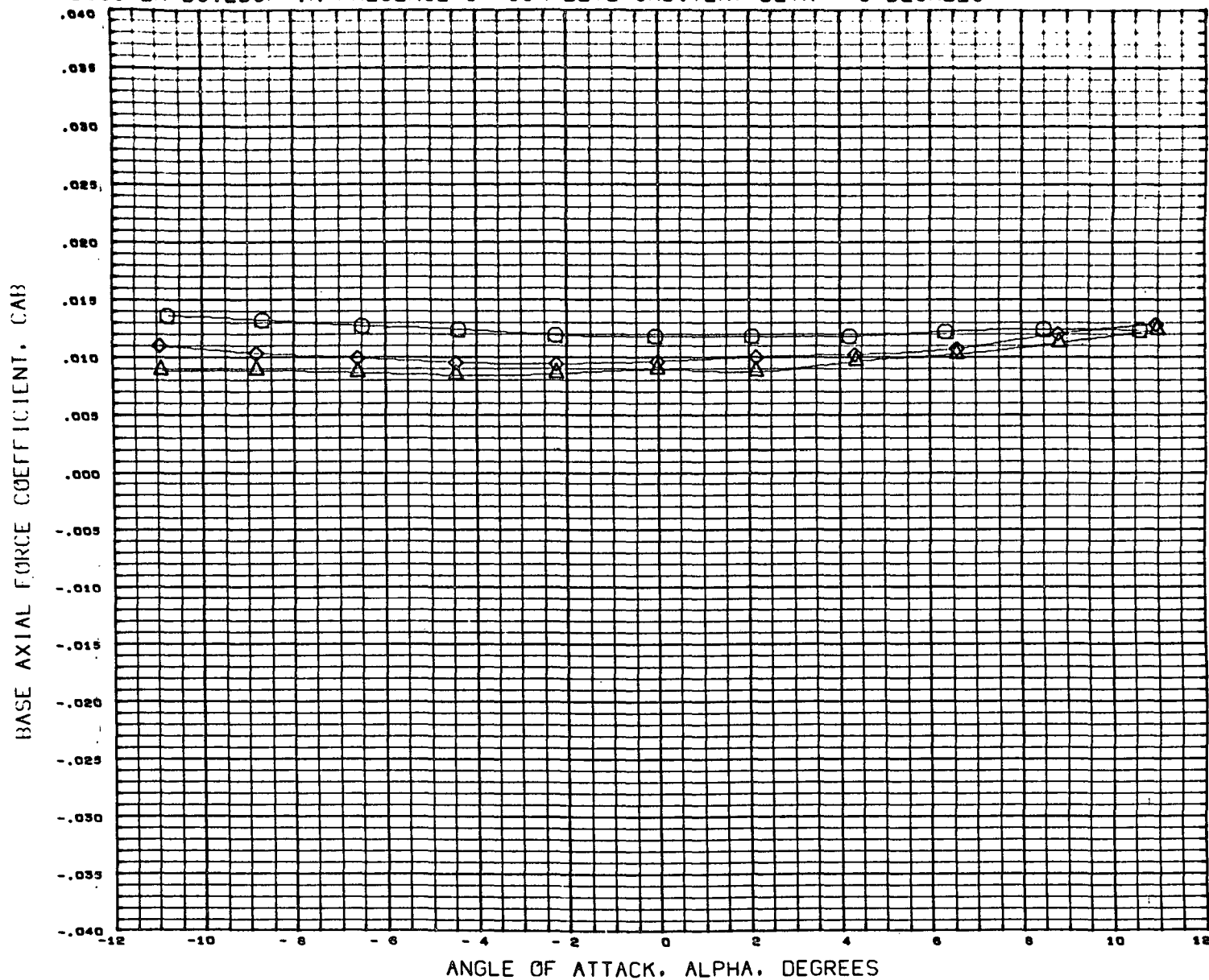
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (13221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVATR | AILRON | ELVORB |
|-------|--------|--------|--------|
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | 50 IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.968

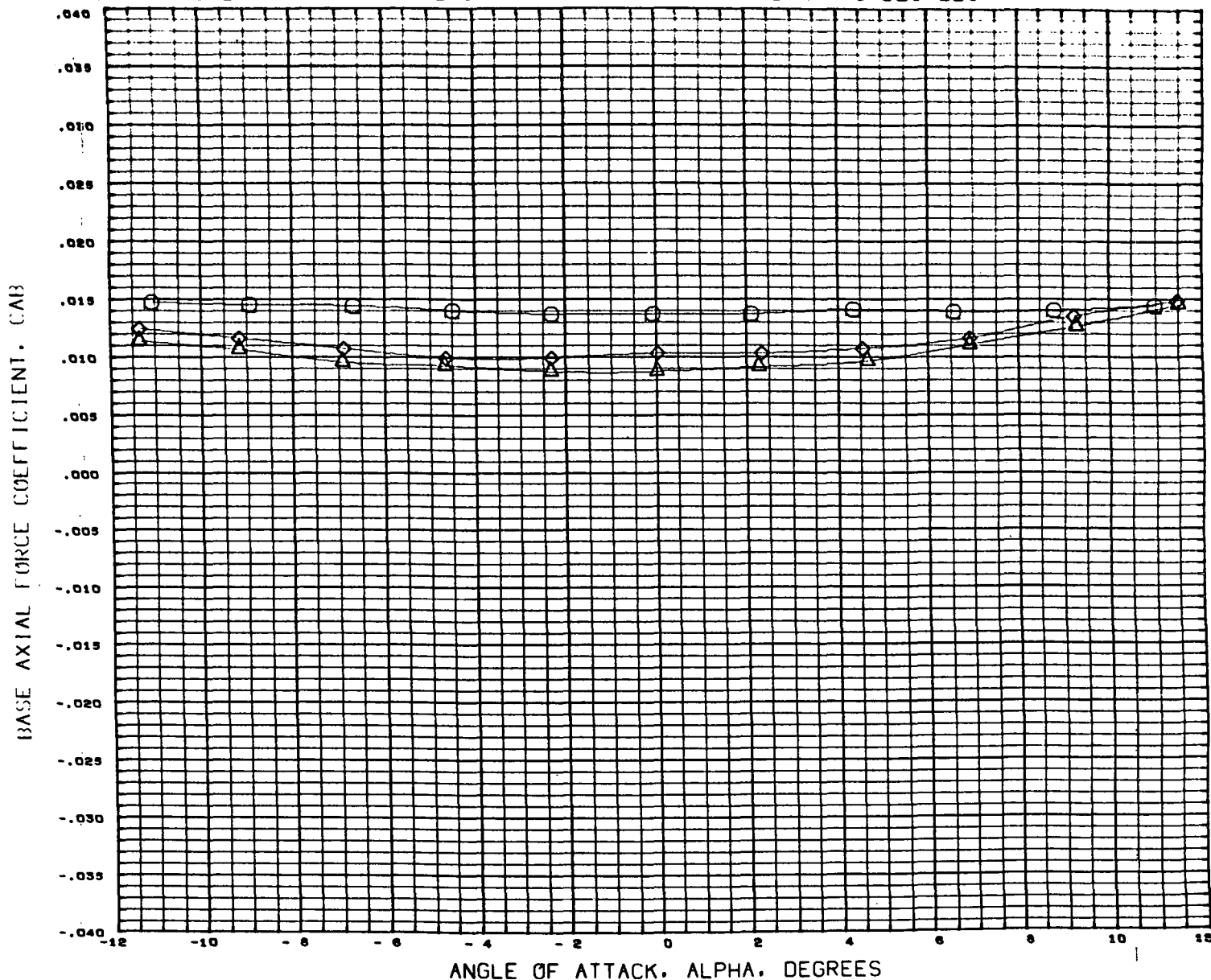
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (13221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.603

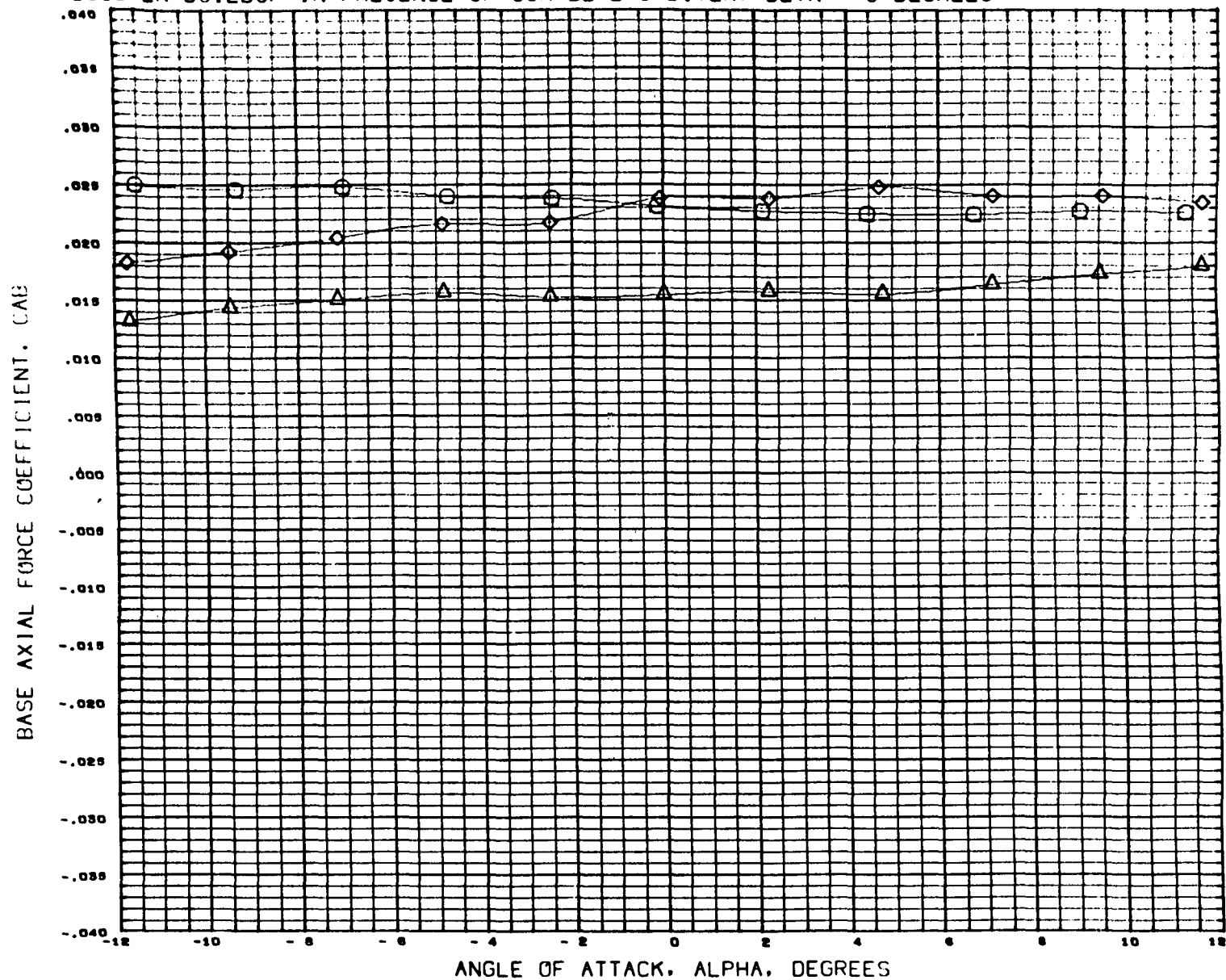
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B3W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B3W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (H3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.902

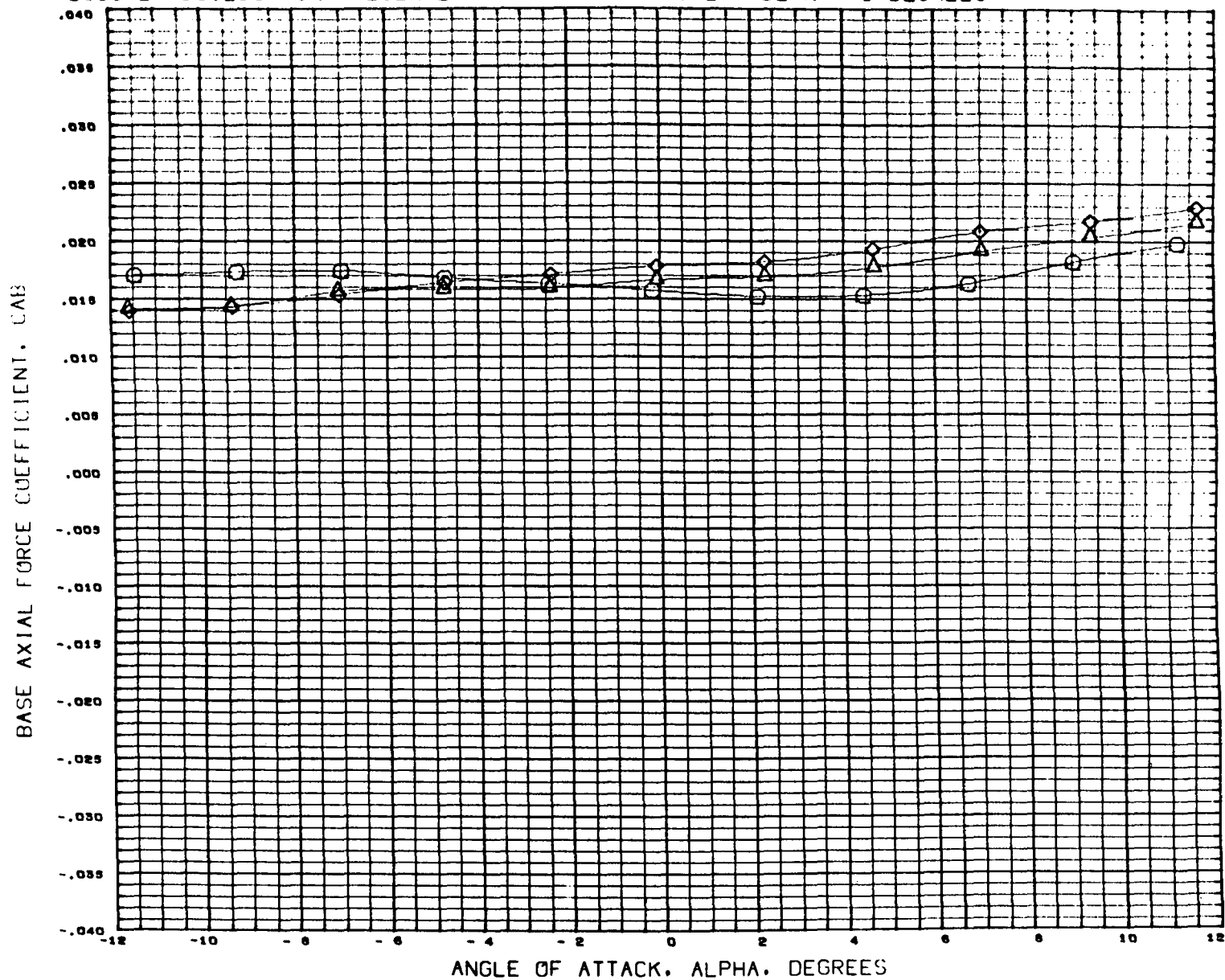
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+85W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | SREF | 13.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+85W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (H3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.106

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



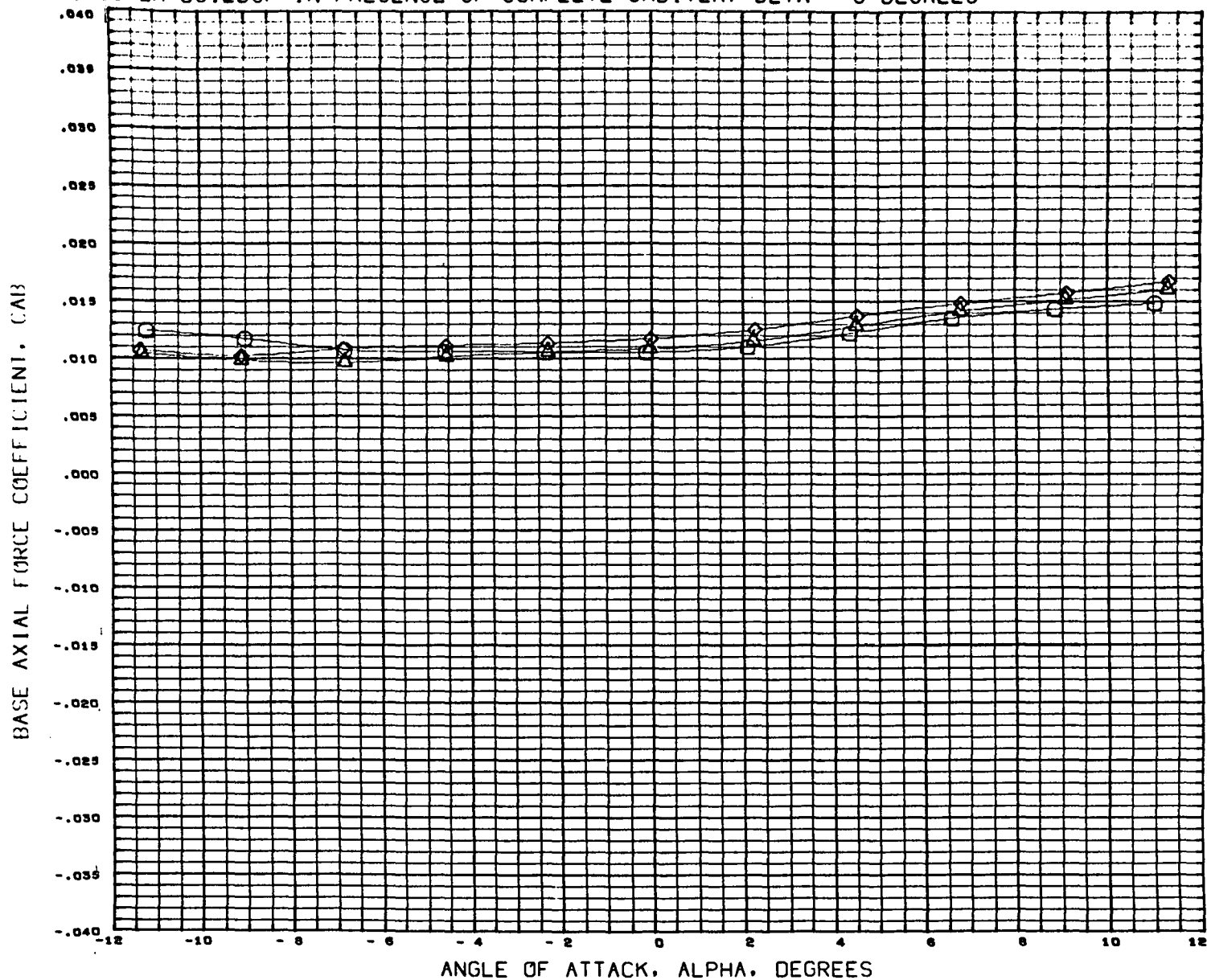
| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|----------|--------|---|
| (H3220A) | ○ | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (H3219A) | △ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (H3221A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVATR | AILRON | ELVORB |
|-------|--------|--------|--------|
| 6.000 | | | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0033 | SCALE |

MACH 1.455

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

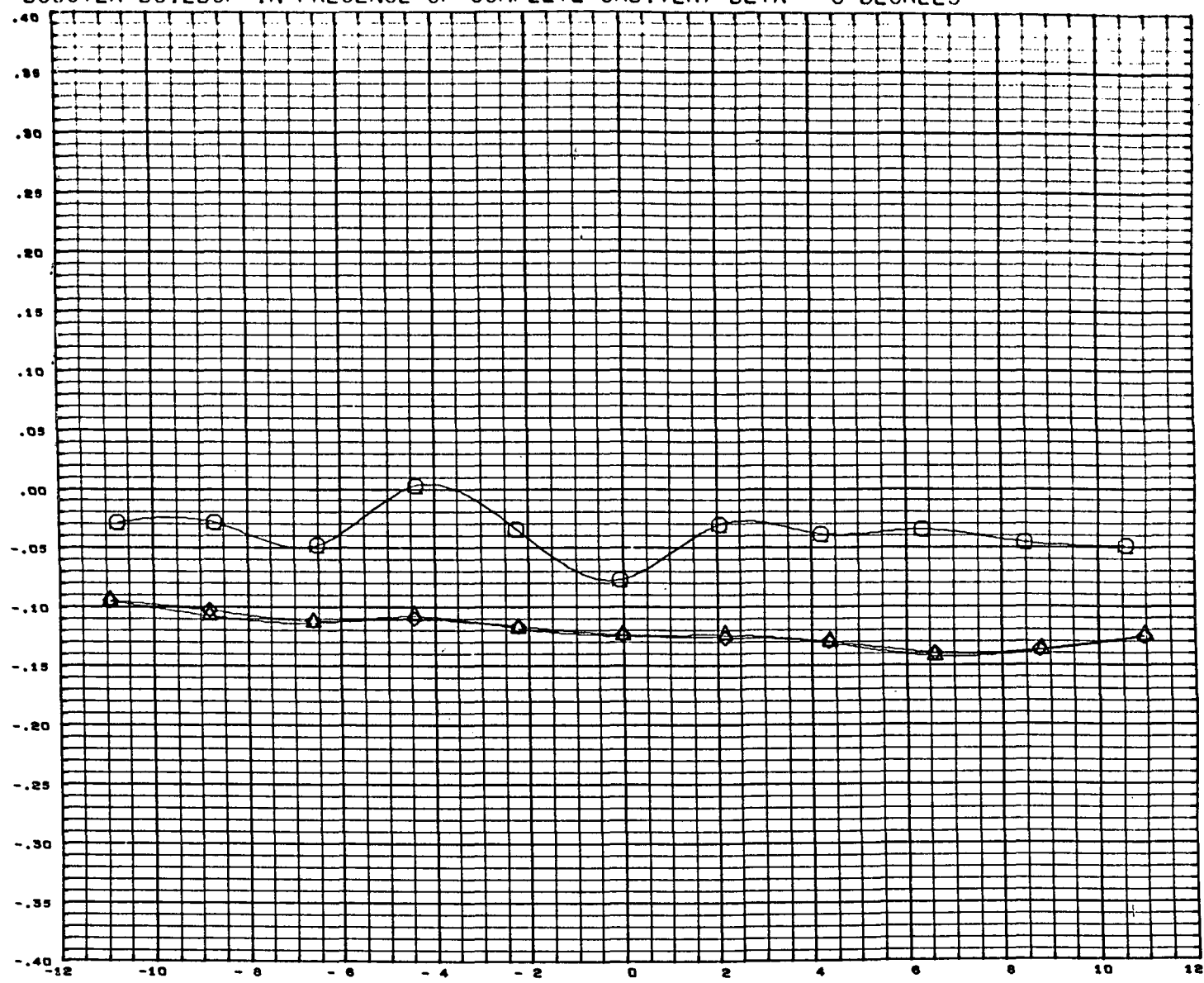


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (H3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (I3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.968

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMALP (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

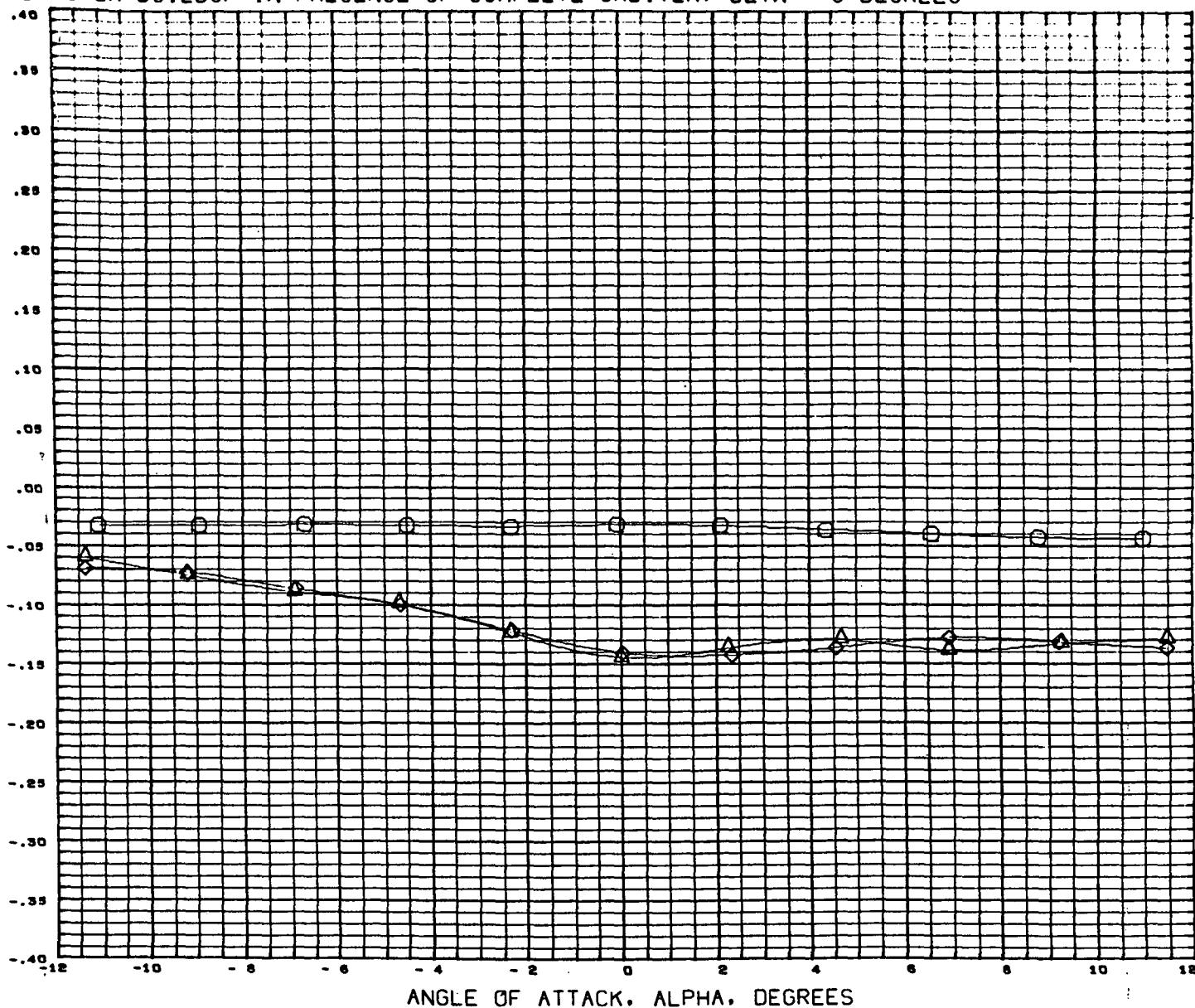


ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------|--------|
| (13220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 19.6560 | SQ IN |
| (13219A) | MSFC490 NR/GD LAUNCH B20C48W14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 | INCHES |
| (13221A) | MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 0.603

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

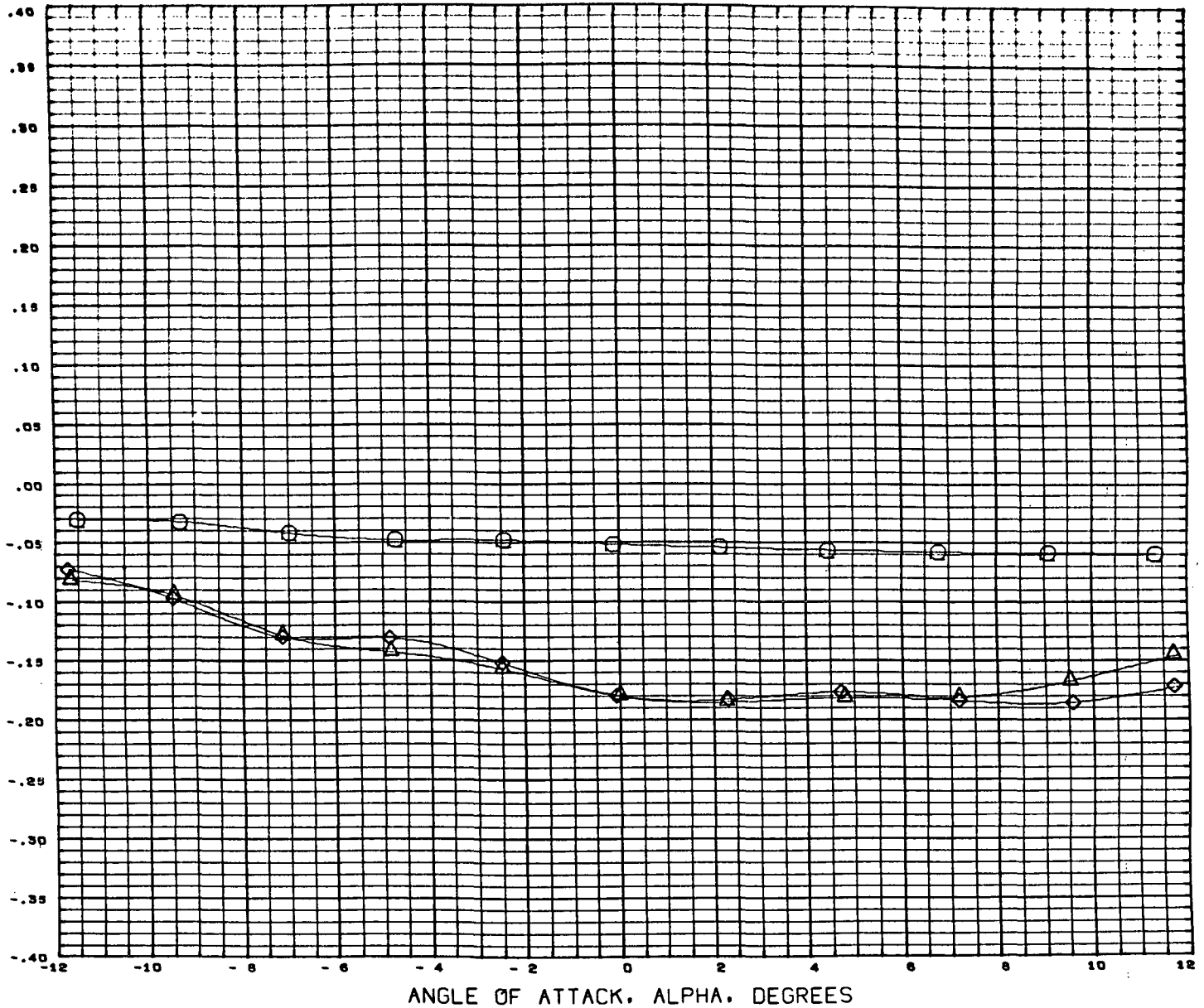


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (13220A) | MSFC490 NR/GD LAUNCH B20+B3W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (13219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B3W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (13221A) | MSFC490 NR/GD LAUNCH B20C4BW14V6+B3W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.902

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMULATED PER DEGREE

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

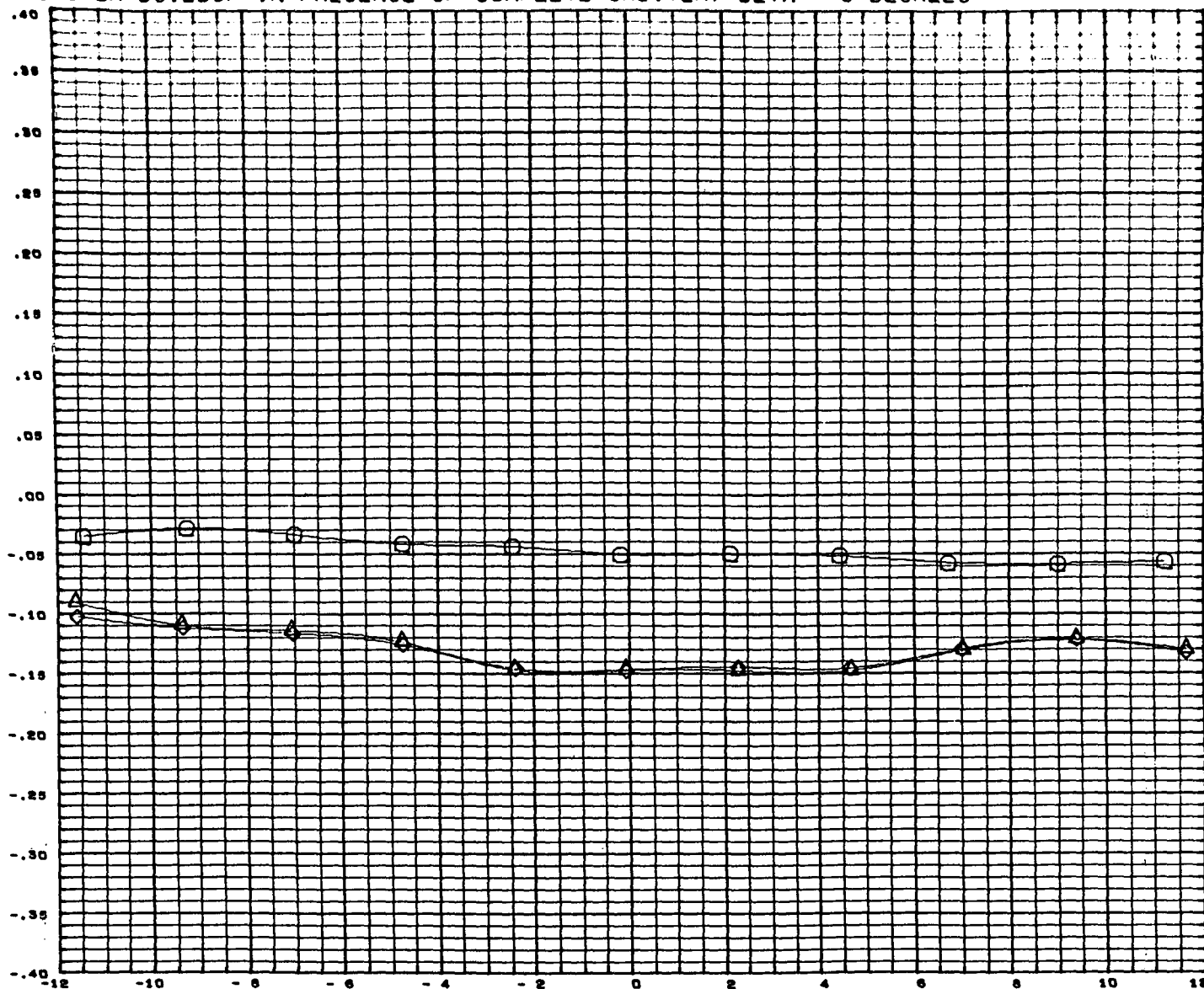


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (13220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6360 SQ IN |
| (13219A) | MSFC490 NR/GD LAUNCH B20C4EW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (13221A) | MSFC490 NR/GD LAUNCH B20C4EW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0950 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.106

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



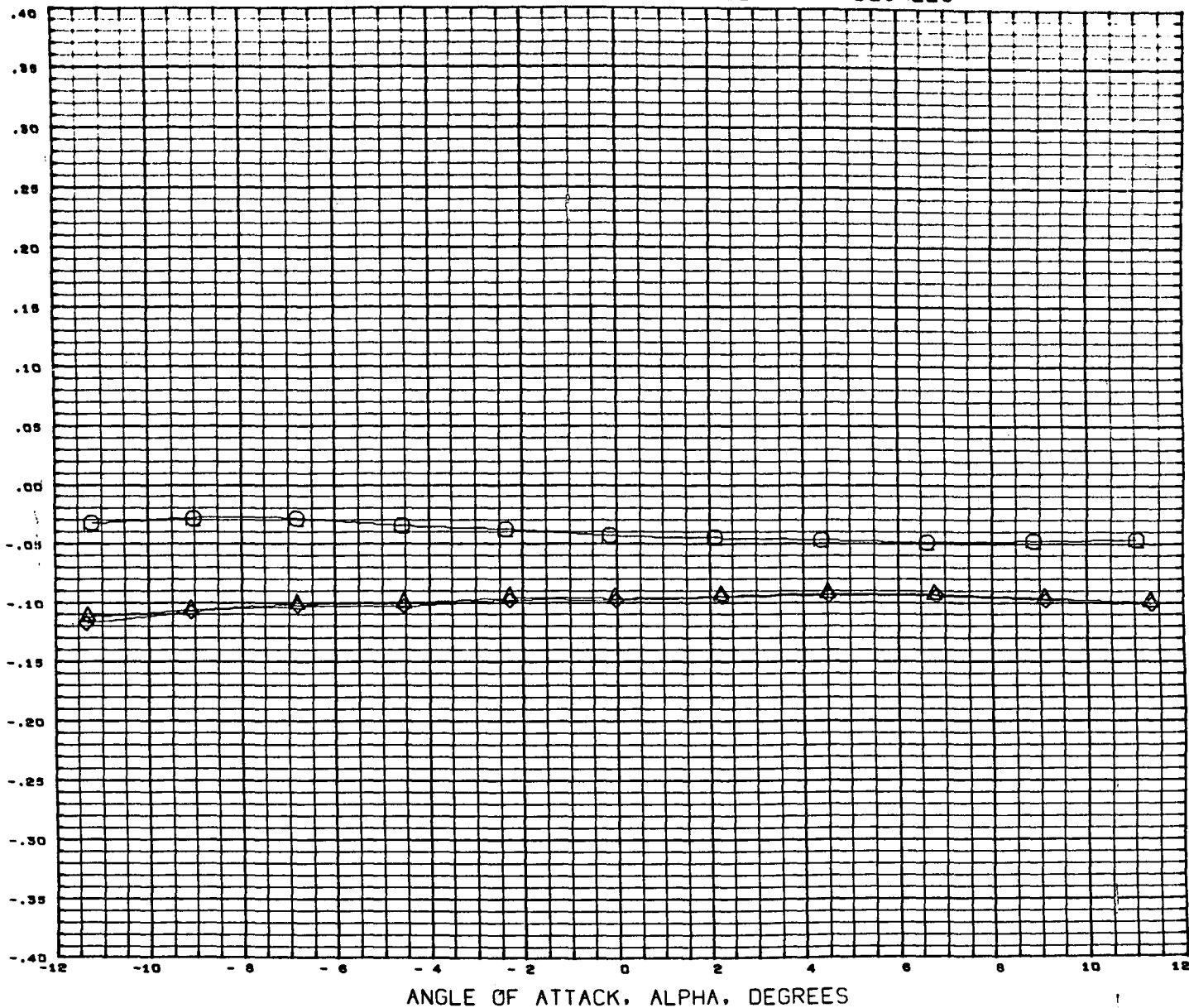
ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (13220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (13219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (13221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.455

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (13220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (13219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (13221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRF | 0.0000 |
| | | | | | | YMRF | 0.0000 |
| | | | | | | ZMRF | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.968

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (13220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (13219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (13221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.603

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



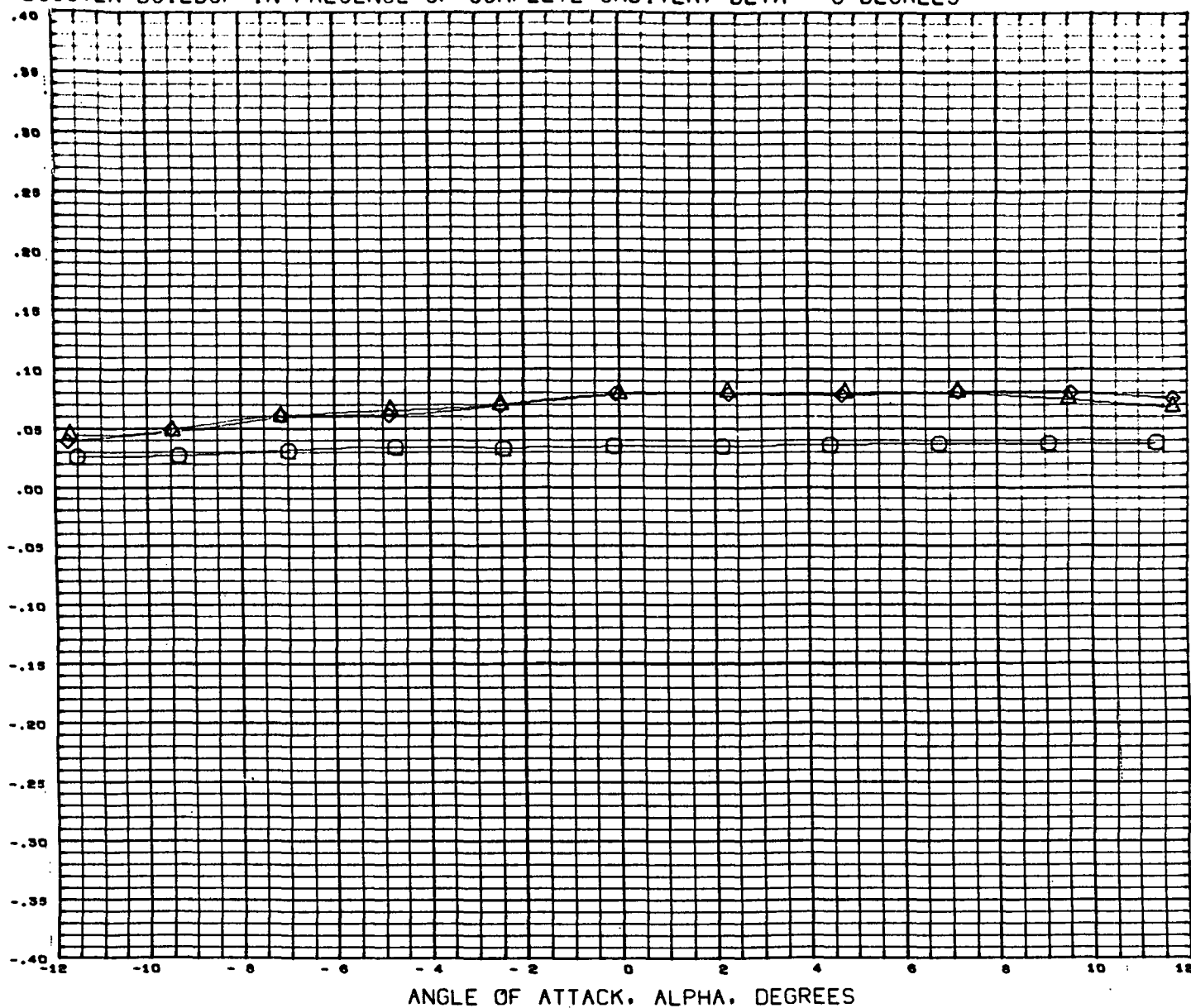
ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|----------|--------|---|-------|--------|--------|--------|-----------------------|---------------|
| (13220A) | ○ | MSFC490 NR/GD LAUNCH B20+B3W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (13219A) | △ | MSFC490 NR/GD LAUNCH B20C4BW14+B3W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (13221A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | | XMRP | 0.0000 |
| | | | | | | | YMRP | 0.0000 |
| | | | | | | | ZMRP | 0.0000 |
| | | | | | | | SCALE | 0.0035 SCALE |

MACH 0.902

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - UNALPH (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (13221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVATR | AILRON | ELVORB |
|-------|--------|--------|--------|
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.106

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



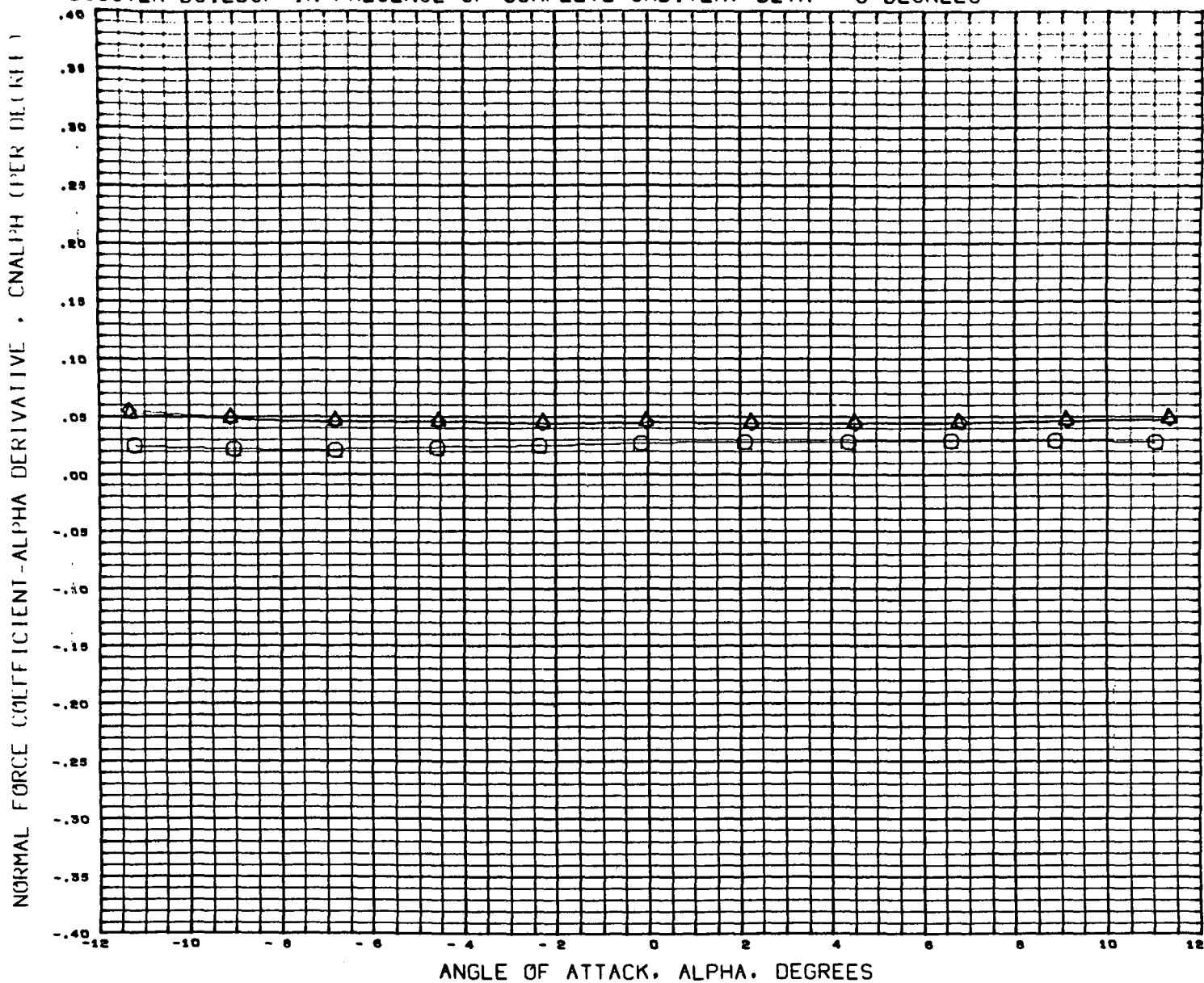
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (13219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (13221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVATR | AILRON | ELVORB |
|-------|--------|--------|--------|
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.455

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (13220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 | 6.000 | | | 0.000 | SREF | 15.6560 SQ IN |
| (13219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (13221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.966

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLIMAP (PER DEGREE)

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES ALPHA=0.



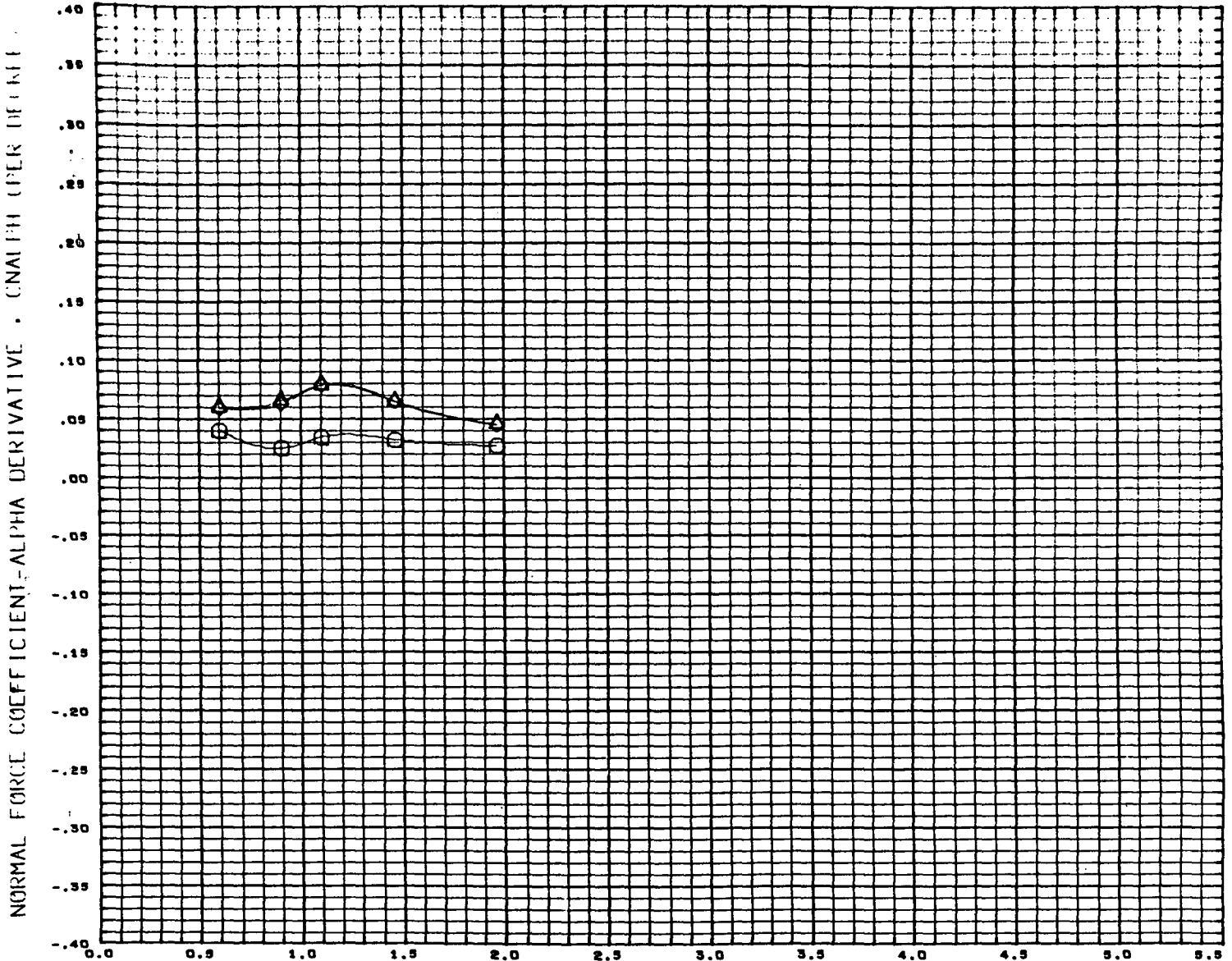
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (J3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (J3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (L3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

MACH NUMBER

| BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | | |
|-------|--------|--------|--------|-----------------------|---------|--------|
| 6.000 | | | 0.000 | SREF | 15.6560 | SQ IN |
| 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 | INCHES |
| 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 | INCHES |
| | | | | XMRP | 0.0000 | |
| | | | | YMRP | 0.0000 | |
| | | | | ZMRP | 0.0000 | |
| | | | | SCALE | 0.0039 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES ALPHA=0.



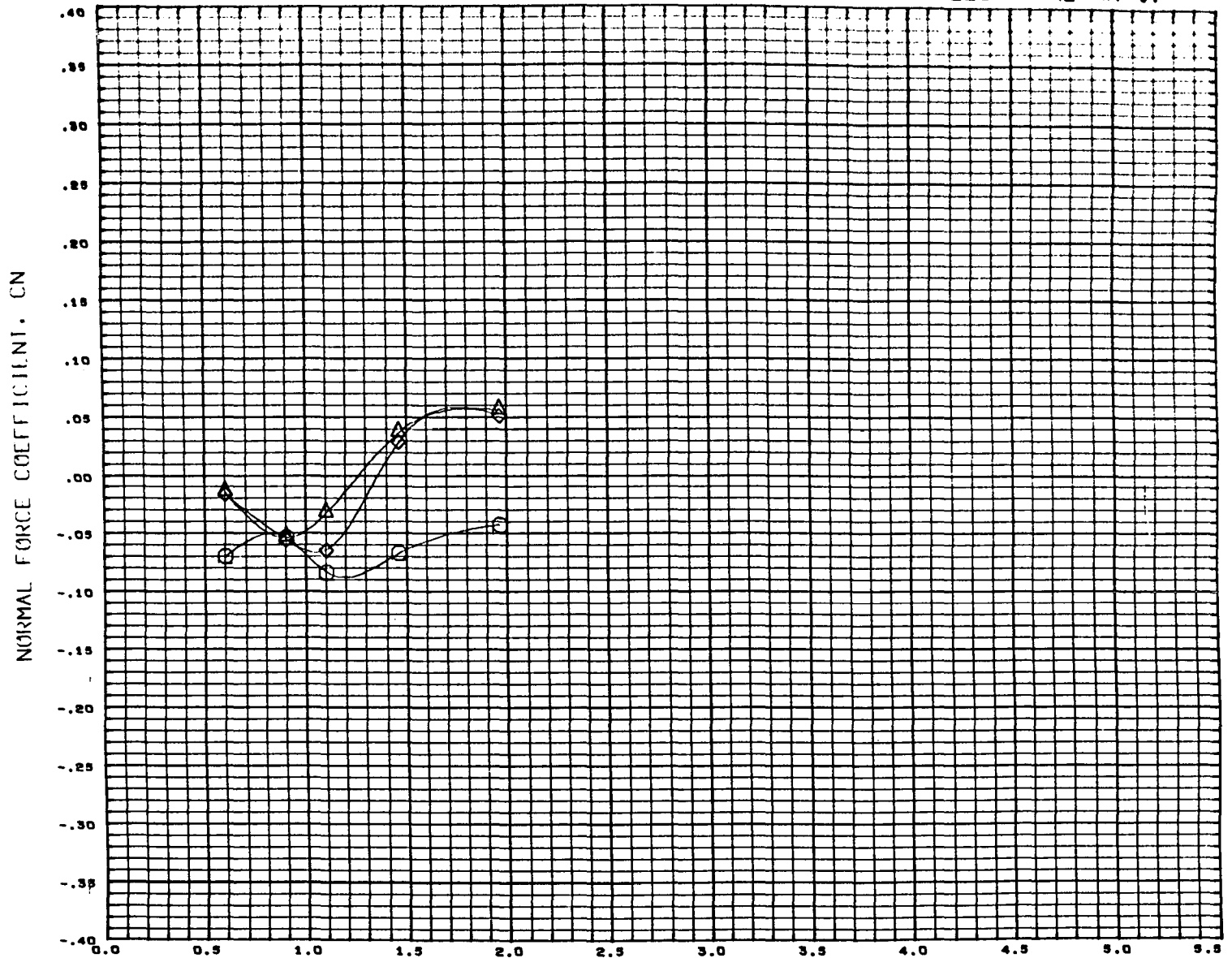
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (J3220A) | MSFC490 NR/GD LAUNCH B20+85W17V17 |
| (J3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+85W17V17 |
| (L3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V6+85W17V17 |

MACH NUMBER

| BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 6.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (K3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (K3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (N3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

MACH NUMBER

| BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 6.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 6.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| 6.000 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (K3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (K3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (N3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

MACH NUMBER

| BETA | ELVATR | AILRON | ELVORB | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 6.000 | 0.000 | 0.000 | 0.000 | SREF 15.6560 SQ IN |
| 6.000 | 0.000 | 0.000 | 0.000 | LREF 3.0990 INCHES |
| 6.000 | 0.000 | 0.000 | 0.000 | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0039 SCALE |

ALPHA 0.000

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (K3220A) | MSFC490 NR/GD LAUNCH B20+B5W17V17 |
| (K3219A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |
| (N3221A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

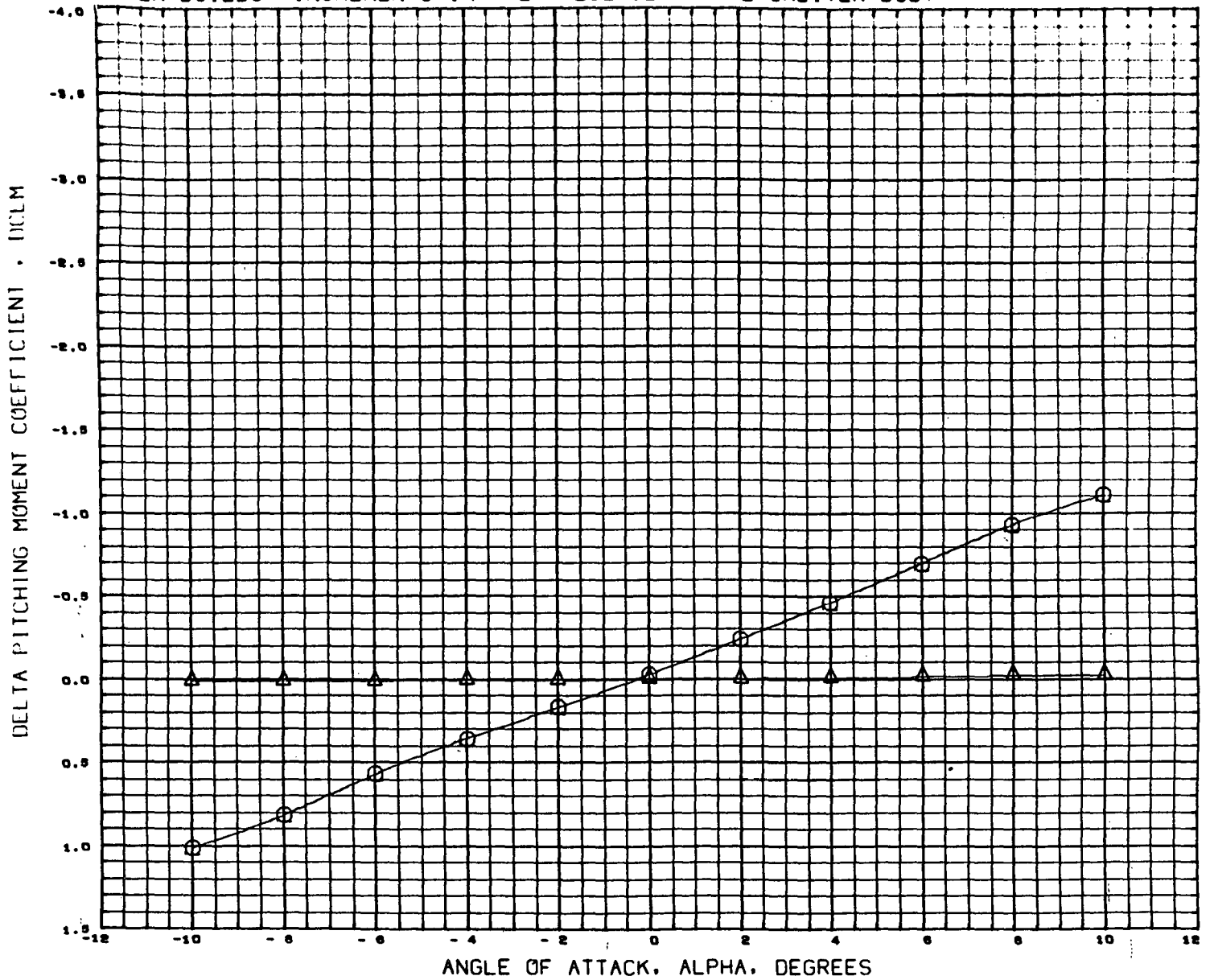
MACH NUMBER

| BETA | ELVATR | AILRON | ELVORB |
|-------|--------|--------|--------|
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |
| 6.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 13.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



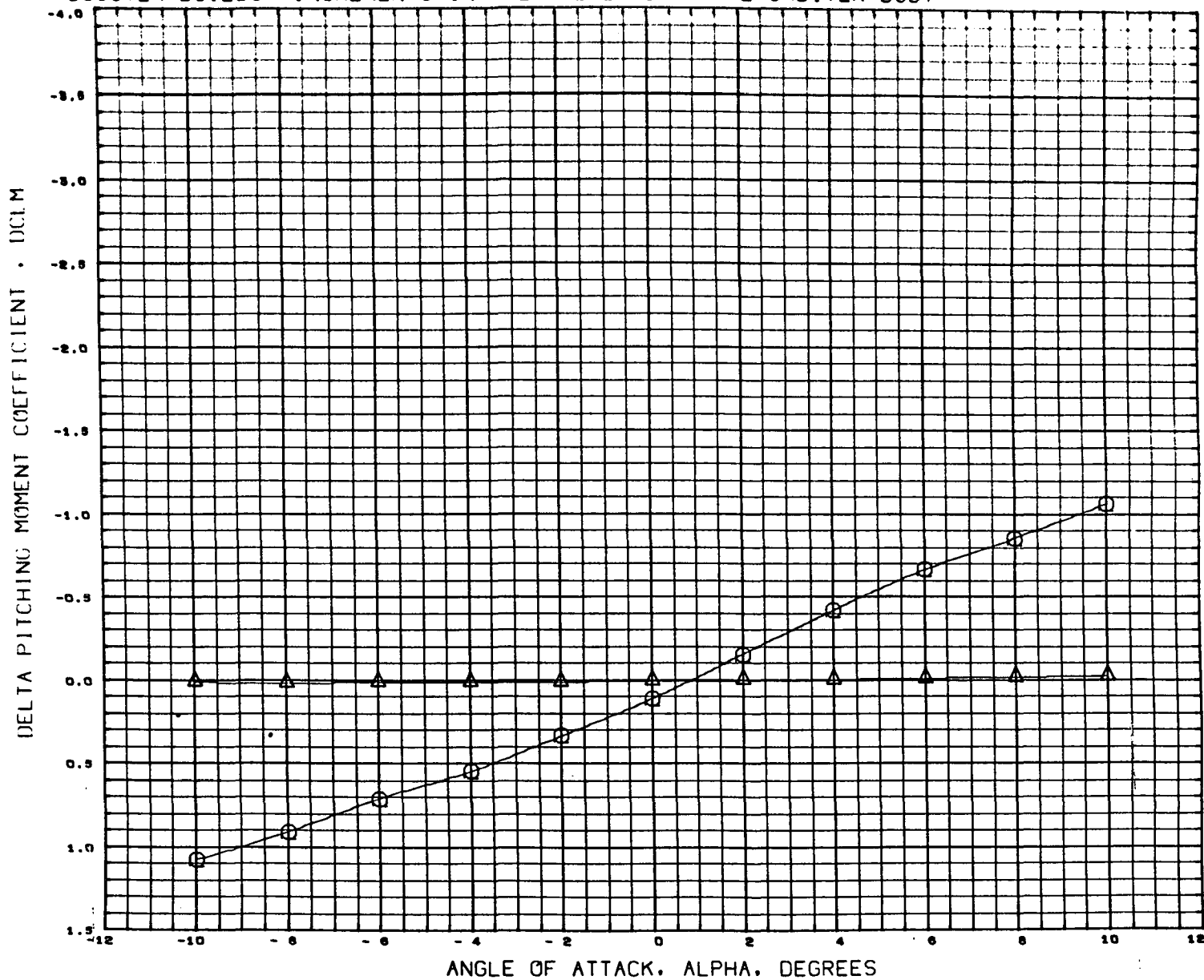
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--|
| (A32206) | A3209A-A3208A (B20W14 + B5) - (B20 + B5) |
| (A32207) | A3212A-A3208A (B20C4B + B5) - (B20 + B5) |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.600

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



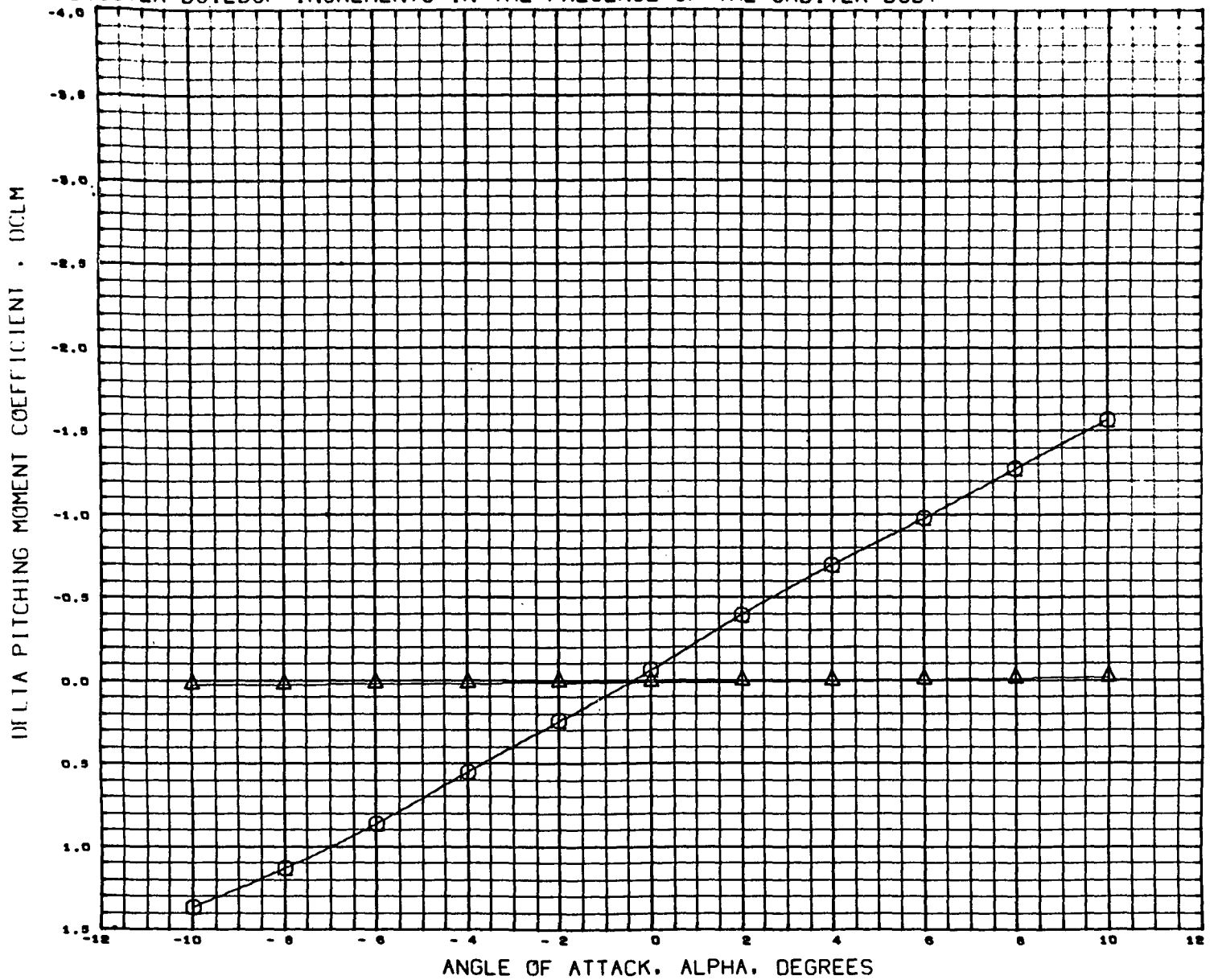
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A32206) A3209A-A3208A (B20W14 + B5) - (B20 + B5)
 (A32207) A3212A-A3208A (B20C4B + B5) - (B20 + B5)

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.900

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



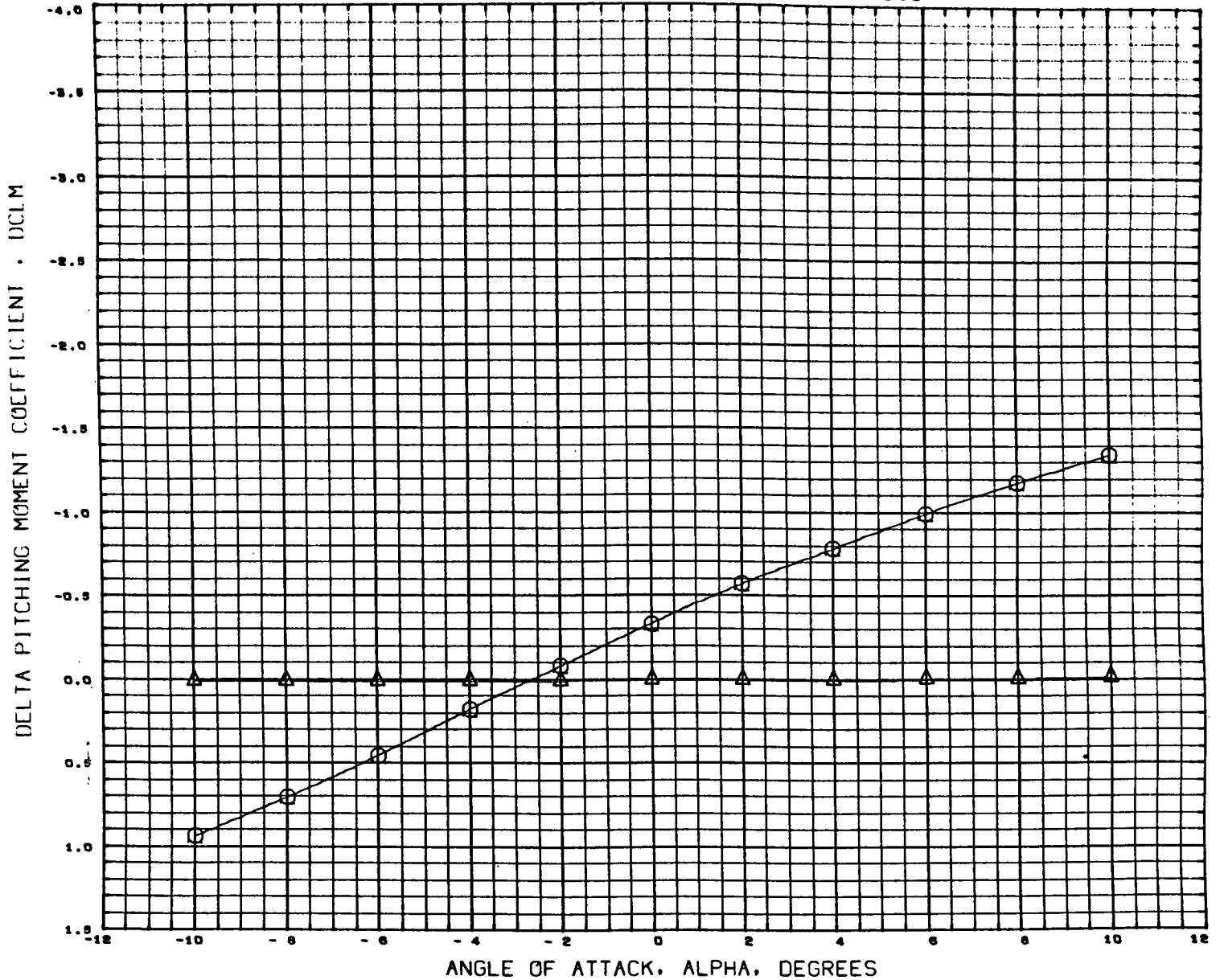
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--|
| (A32206) | A3209A-A3208A (B20W14 + B5) - (B20 + B5) |
| (A32207) | A3212A-A3208A (B20C48 + B5) - (B20 + B5) |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0033 SCALE |

MACH 1.100

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



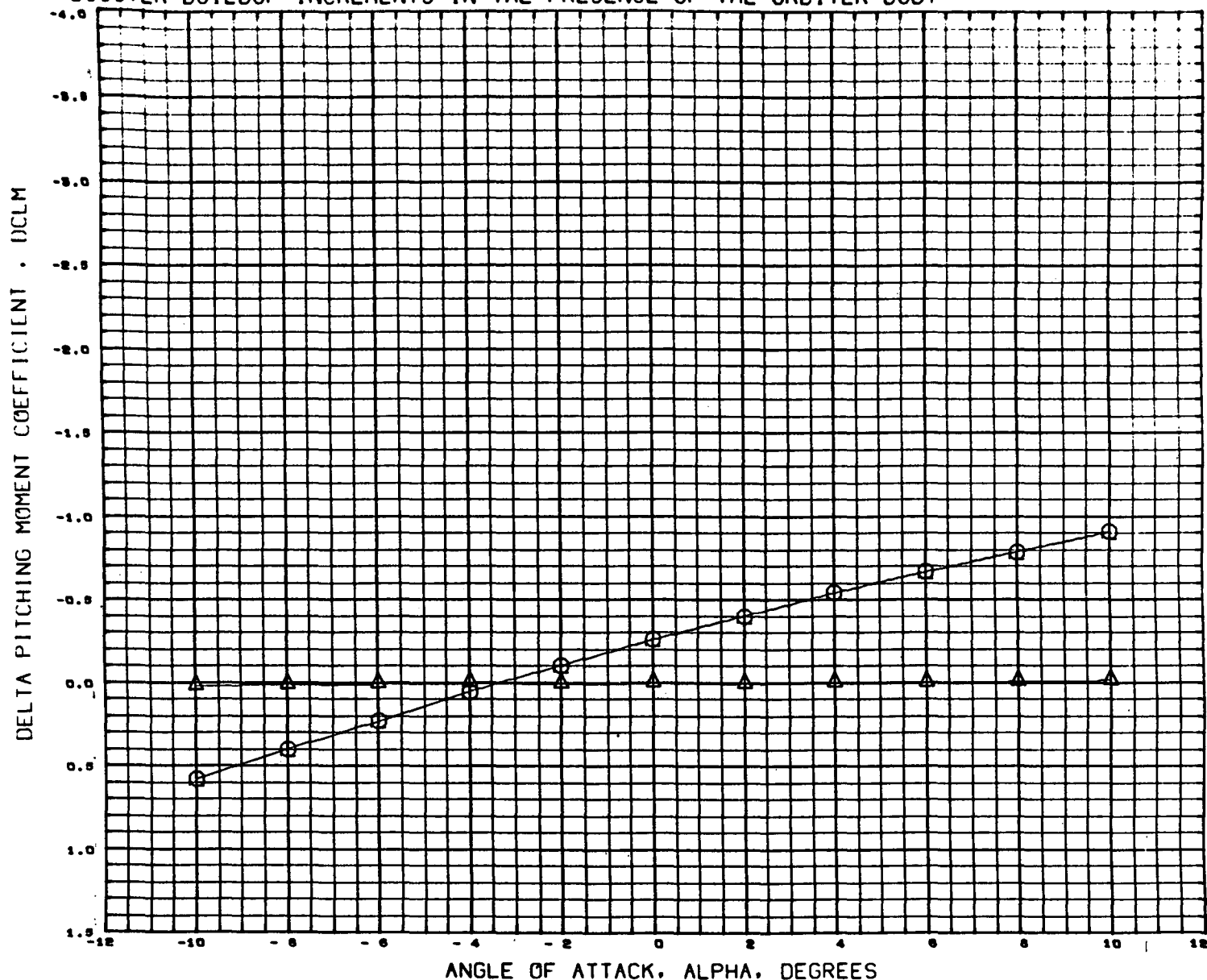
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--|
| (A32206) | A3209A-A3208A (B20W14 + B5) - (B20 + B5) |
| (A32207) | A3212A-A3208A (B20C4B + B5) - (B20 + B5) |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.460

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



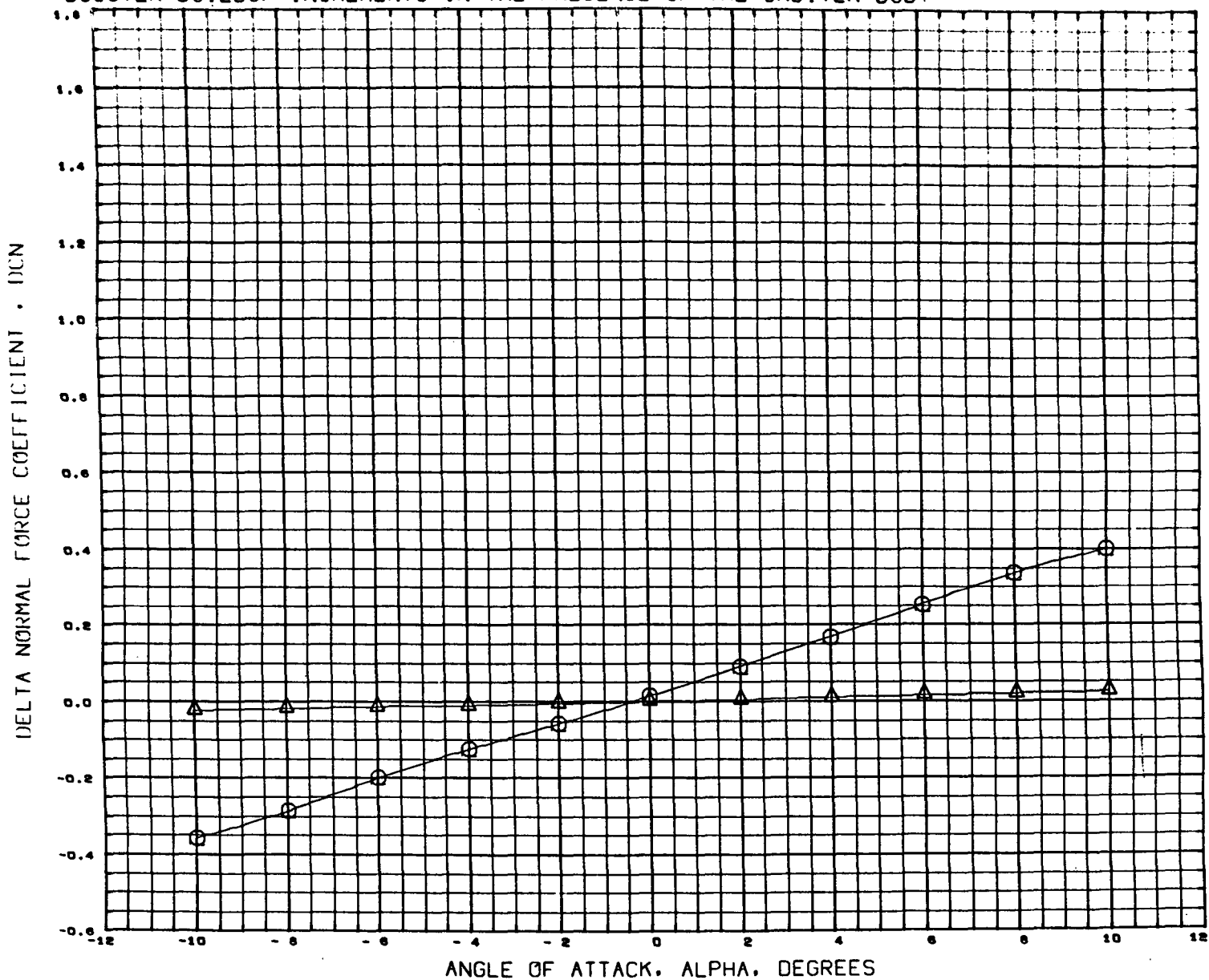
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--|
| (A32206) | A3209A-A3208A (B20W14 + B5) - (B20 + B5) |
| (A32207) | A3212A-A3208A (B20C4B + B5) - (B20 + B5) |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 0.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.960

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A32206) A3209A-A3208A (B20W14 + B5) - (B20 + B5)

(A32207) A3212A-A3208A (B20C4B + B5) - (B20 + B5)

BETA POSITN ORBINC

0.000 1.000 0.000

0.000 1.000 0.000

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0950 INCHES

BREF 6.0950 INCHES

XMRP 0.0000

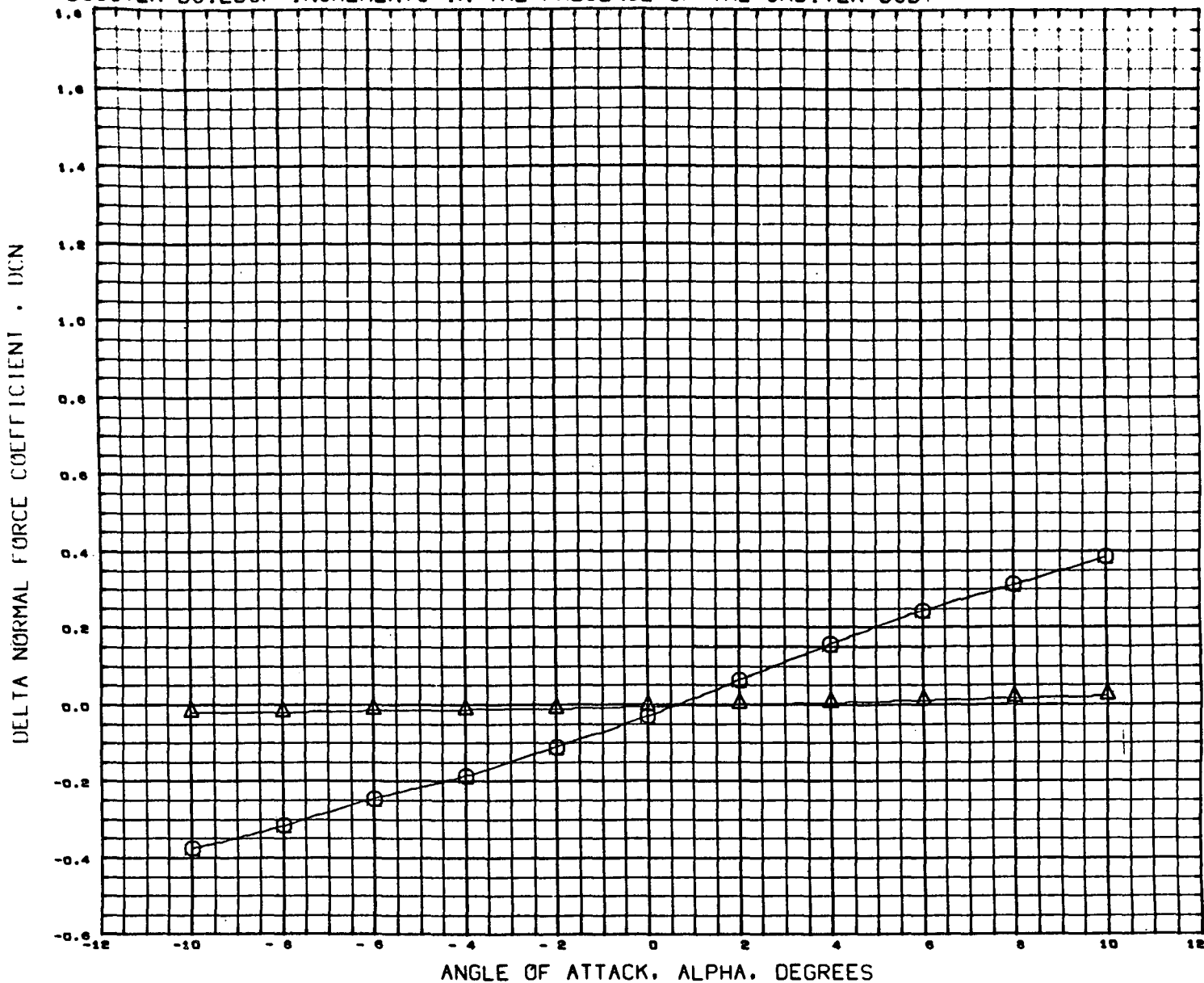
YMRP 0.0000

ZMRP 0.0000

SCALE 0.0035 SCALE

MACH 0.600

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--|
| (A32206) | A3209A-A3208A (B20W14 + B5) - (B20 + B5) |
| (A32207) | A3212A-A3208A (B20C4B + B5) - (B20 + B5) |

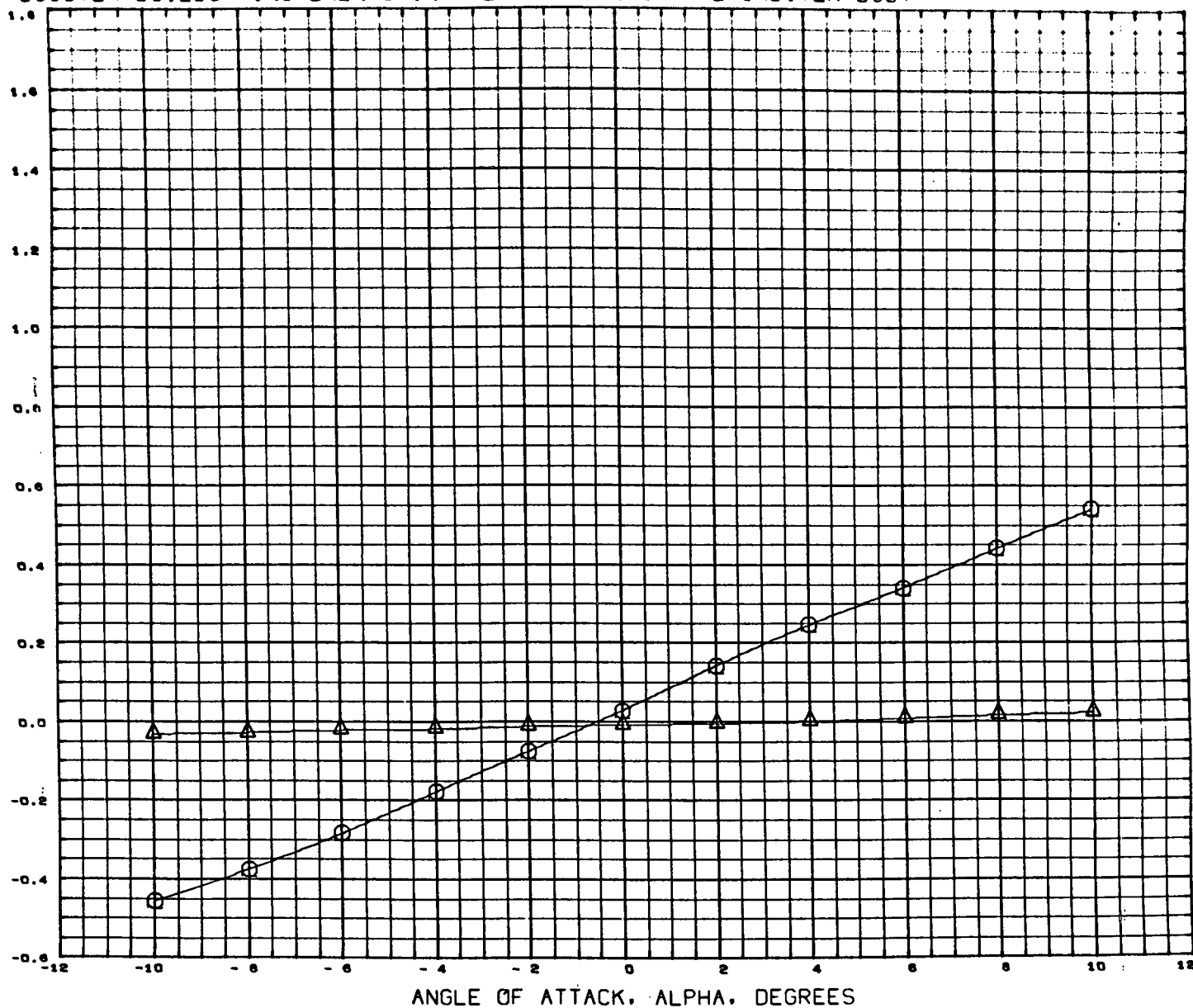
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 0.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.900

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY

DELTA NORMAL FORCE COEFFICIENT, DCN



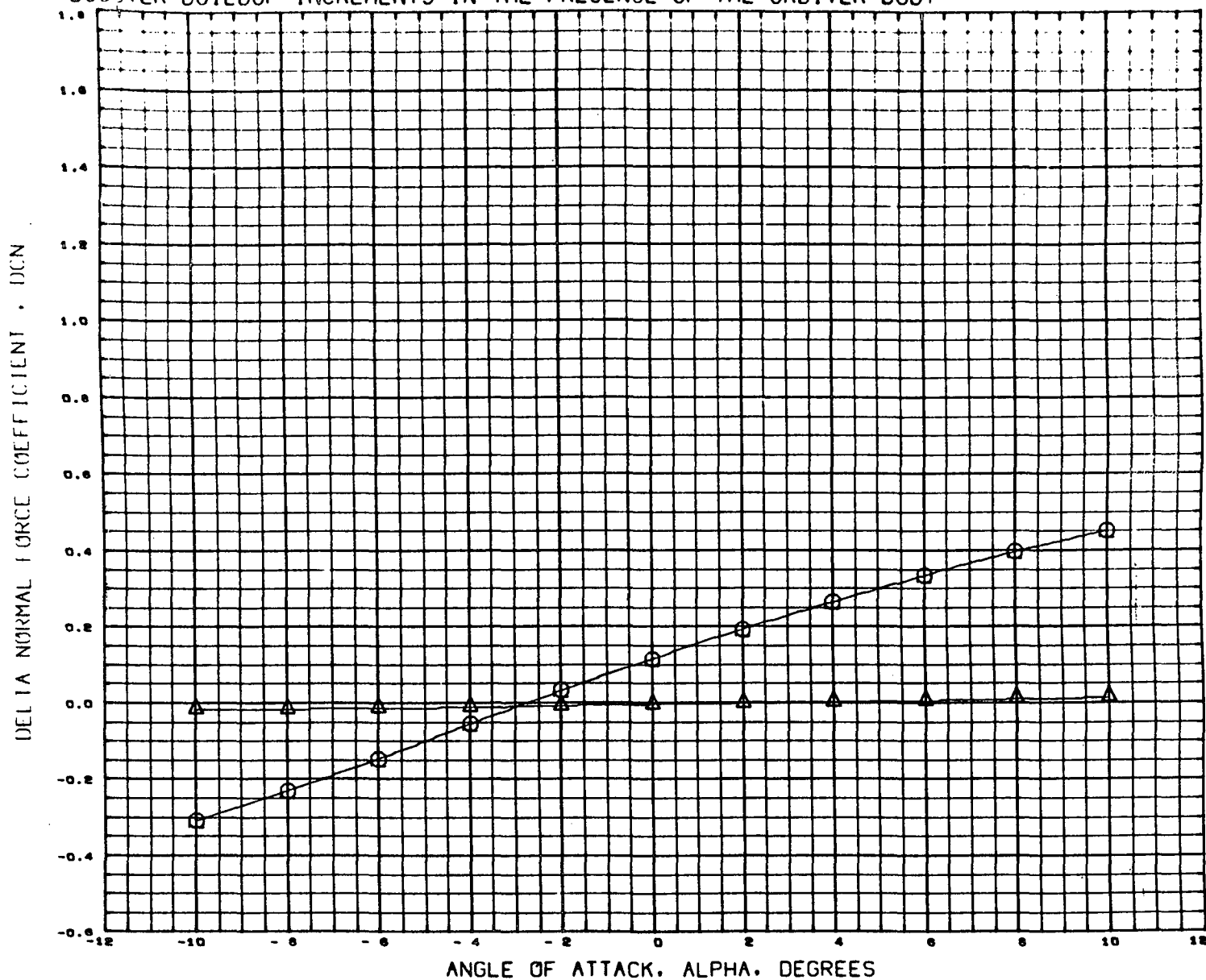
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A32206) A3209A-A3208A (B20W14 + B5) - (B20 + B5)
 (A32207) A3212A-A3208A (B20C4E + B5) - (B20 + B5)

BETA POSITN ORBINC
 0.000 1.000 0.000
 0.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.100

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A32206) A3209A-A3208A (B20W14 + B5) - (B20 + B5)

(A32207) A3212A-A3208A (B20C4B + B5) - (B20 + B5)

BETA POSITN ORBINC

0.000 1.000 0.000

0.000 1.000 0.000

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0990 INCHES

BREF 6.0990 INCHES

XMRP 0.0000

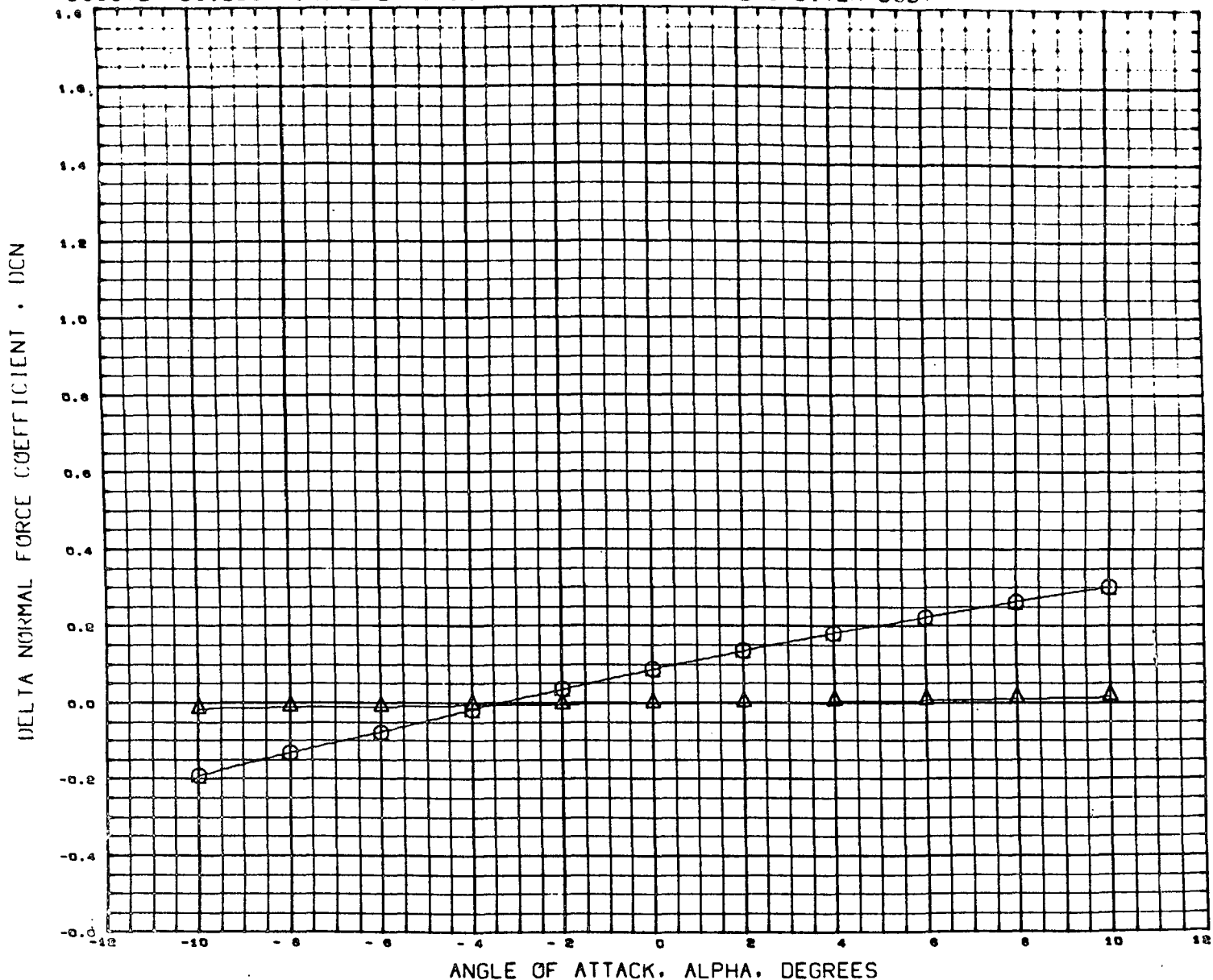
YMRP 0.0000

ZMRP 0.0000

SCALE 0.0033 SCALE

MACH 1.460

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A32206) A3209A-A3208A (B20W14 + B5) - (B20 + B5)

(A32207) A3212A-A3208A (B20C48 + B5) - (B20 + B5)

BETA POSITN ORBINC

0.000 1.000 0.000

0.000 1.000 0.000

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0590 INCHES

BREF 6.0590 INCHES

XMRP 0.0000

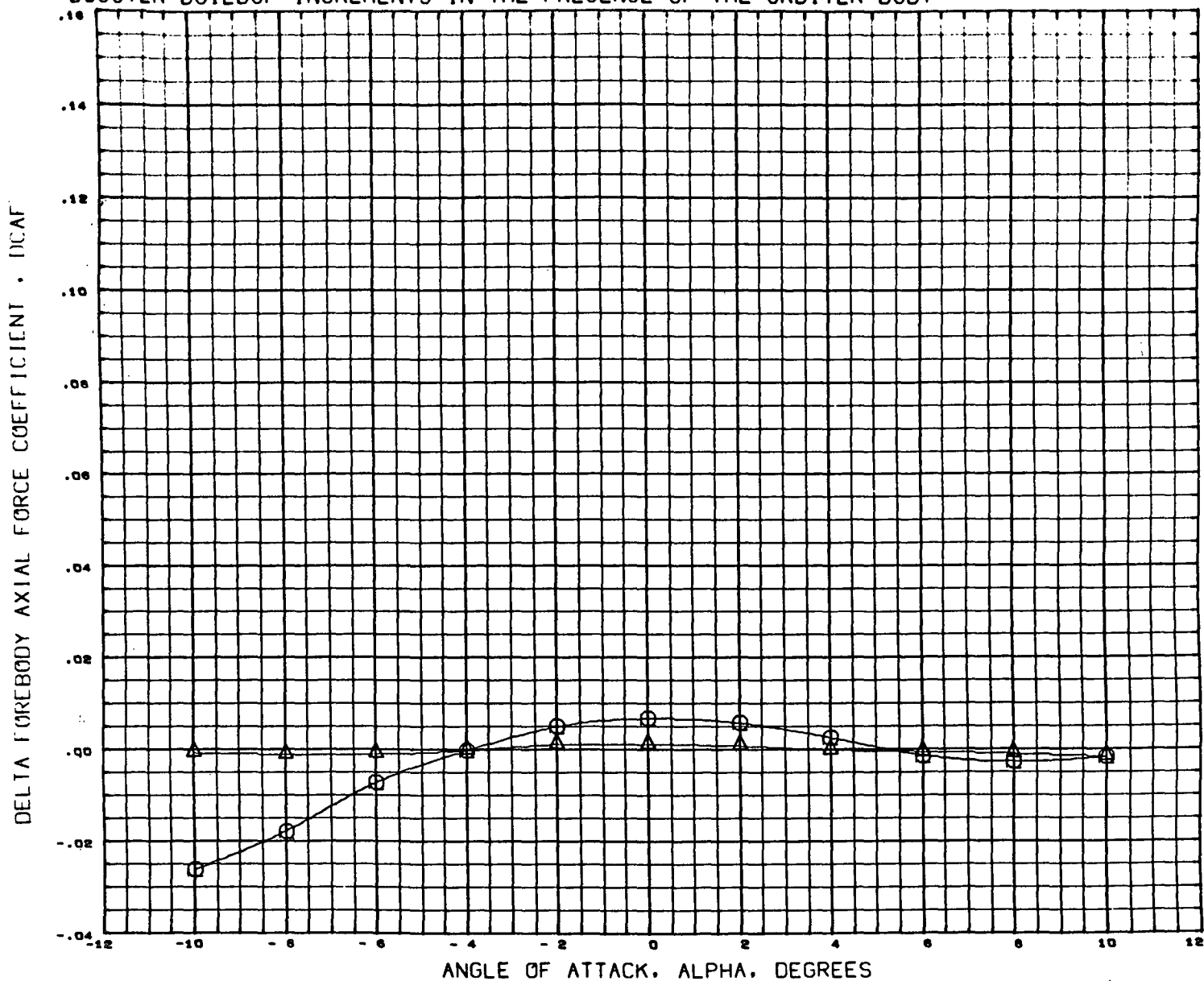
YMRP 0.0000

ZMRP 0.0000

SCALE 0.0035 SCALE

MACH 1.960

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



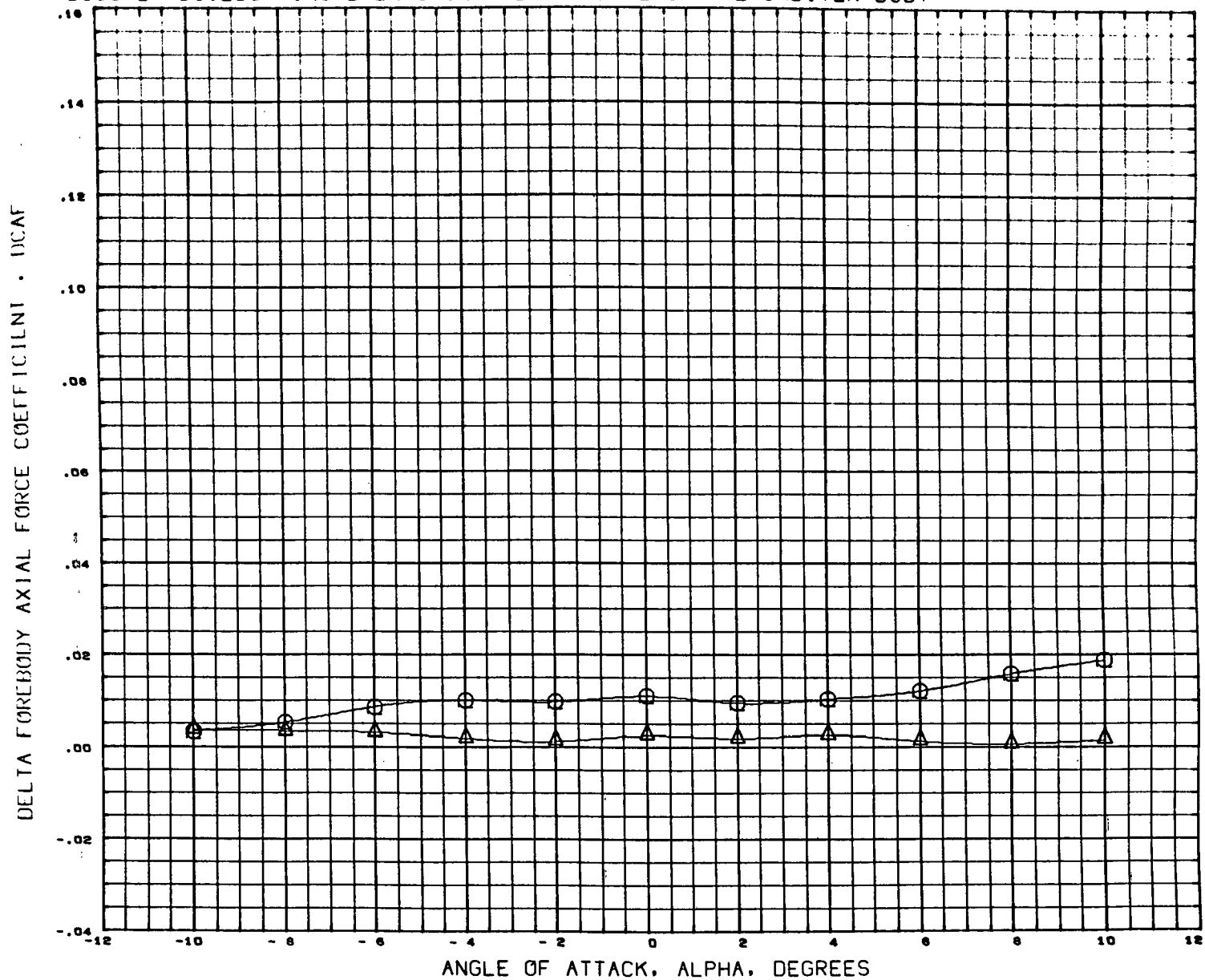
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--|
| (A32206) | A3209A-A3208A (B20W14 + B5) - (B20 + B5) |
| (A32207) | A3212A-A3208A (B20C4B + B5) - (B20 + B5) |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.600

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



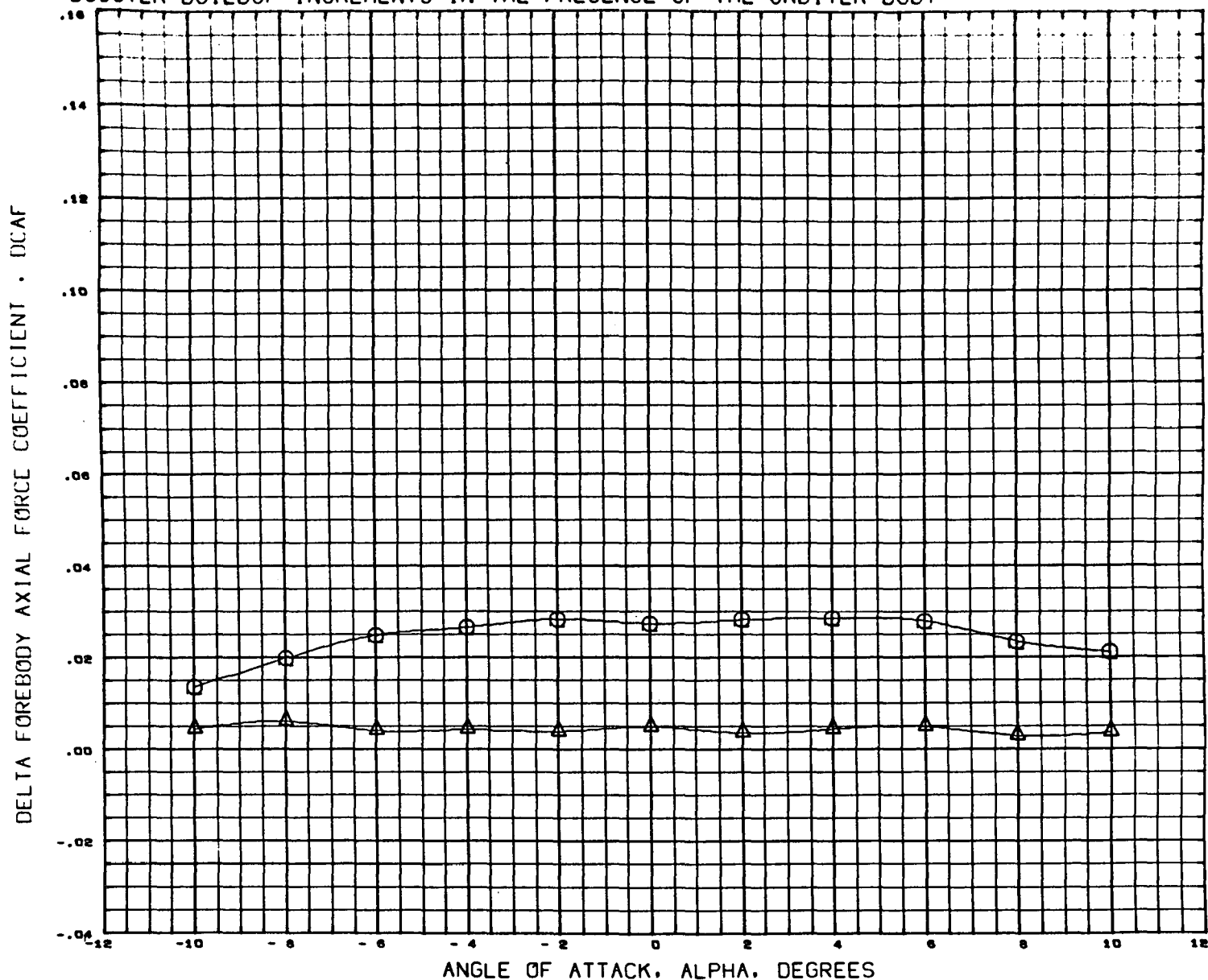
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--|
| (A32206) | A3209A-A3208A (B20W14 + B5) - (B20 + B5) |
| (A32207) | A3212A-A3208A (B20C4B + B5) - (B20 + B5) |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.900

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A32206) A3209A-A3208A (B20W14 + B5) - (B20 + B5)

(A32207) A3212A-A3208A (B20C48 + B5) - (B20 + B5)

BETA POSITN ORBINC

0.000 1.000 0.000

0.000 1.000 0.000

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0950 INCHES

BREF 6.0990 INCHES

XMRP 0.0000

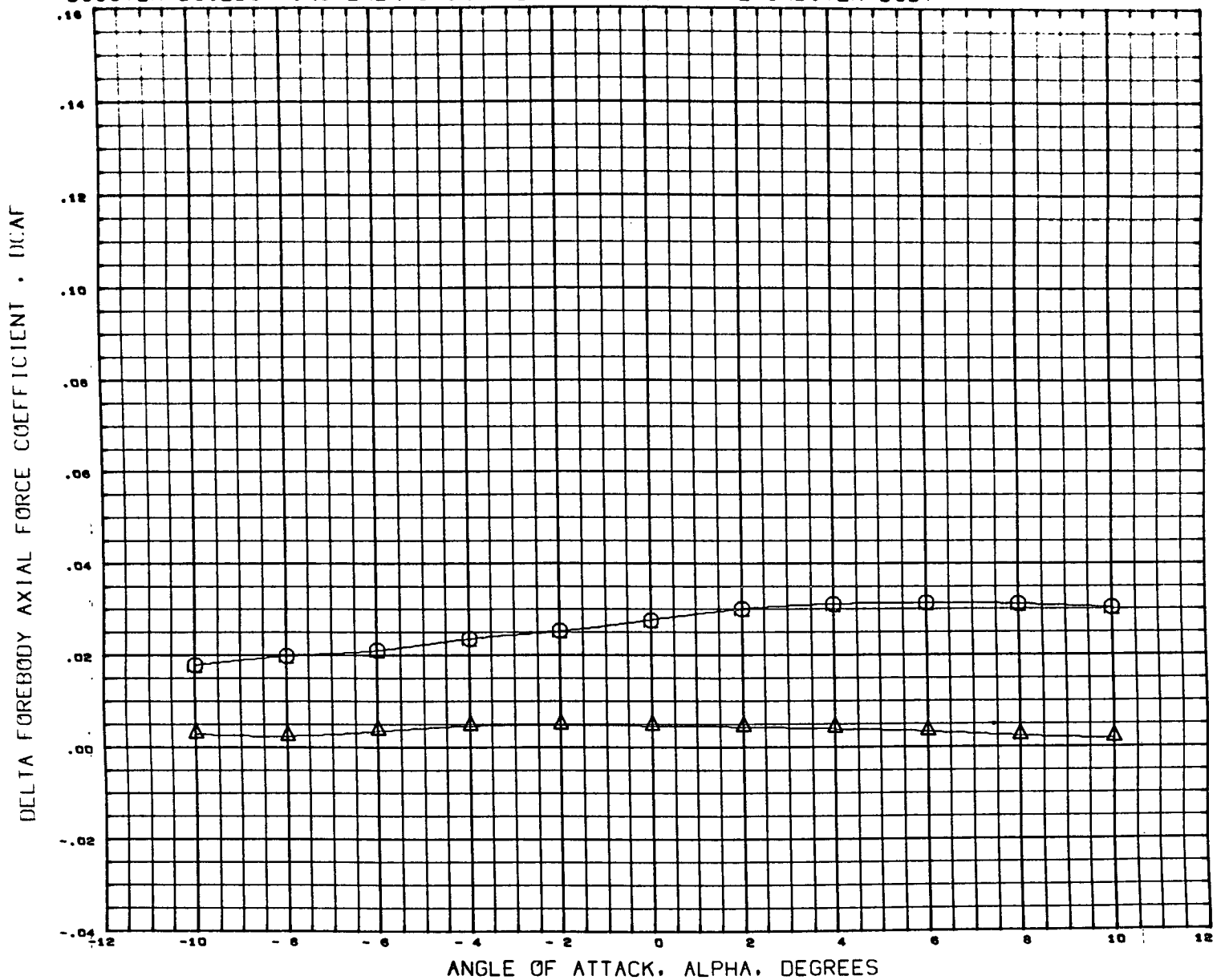
YMRP 0.0000

ZMRP 0.0000

SCALE 0.0035 SCALE

MACH 1.100

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



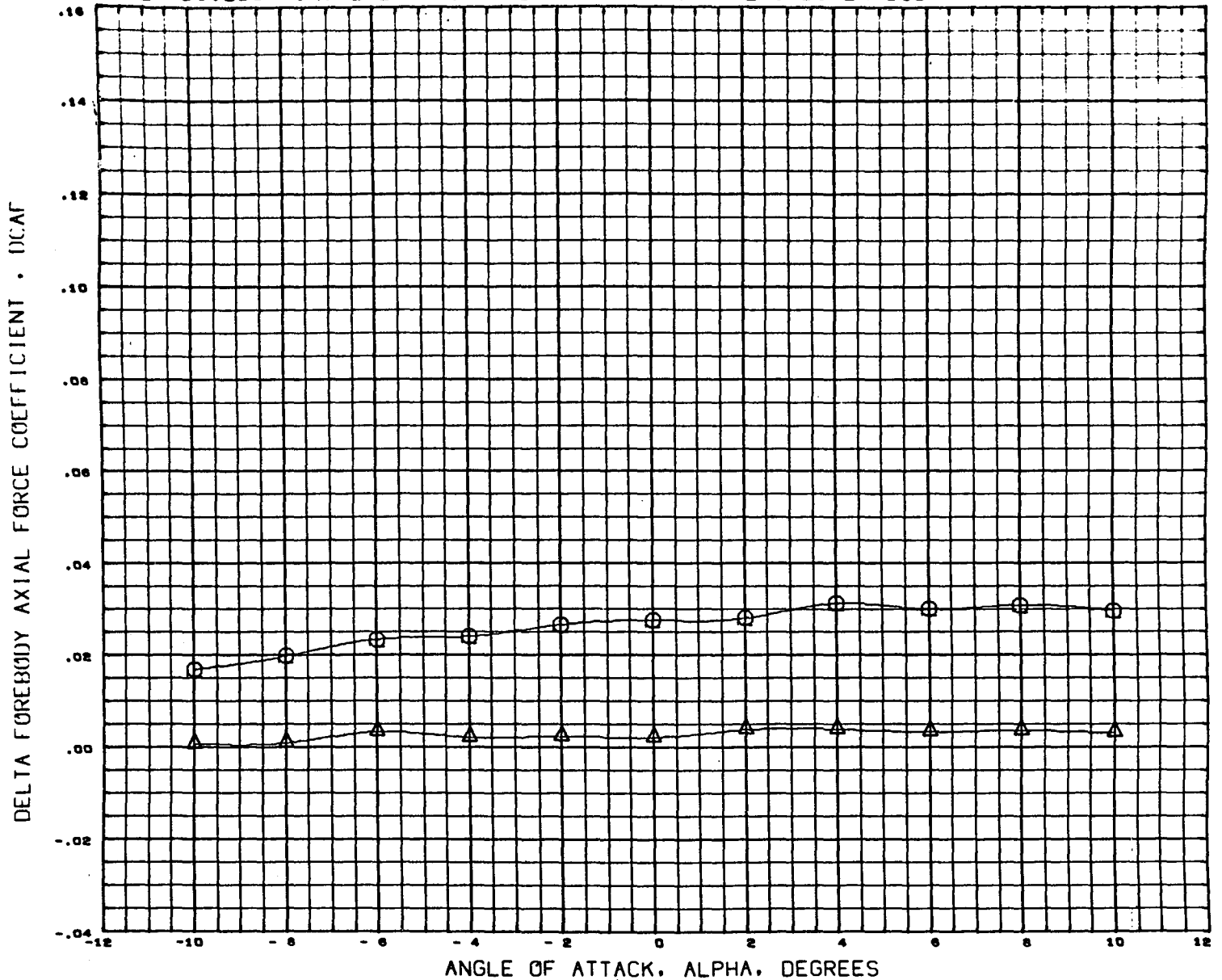
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A32206) A3209A-A3208A (B20W14 + B5) - (B20 + B5)
 (A32207) A3212A-A3208A (B20C4B + B5) - (B20 + B5)



BETA POSITN ORBINC
 0.000 1.000 0.000
 0.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.460

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY



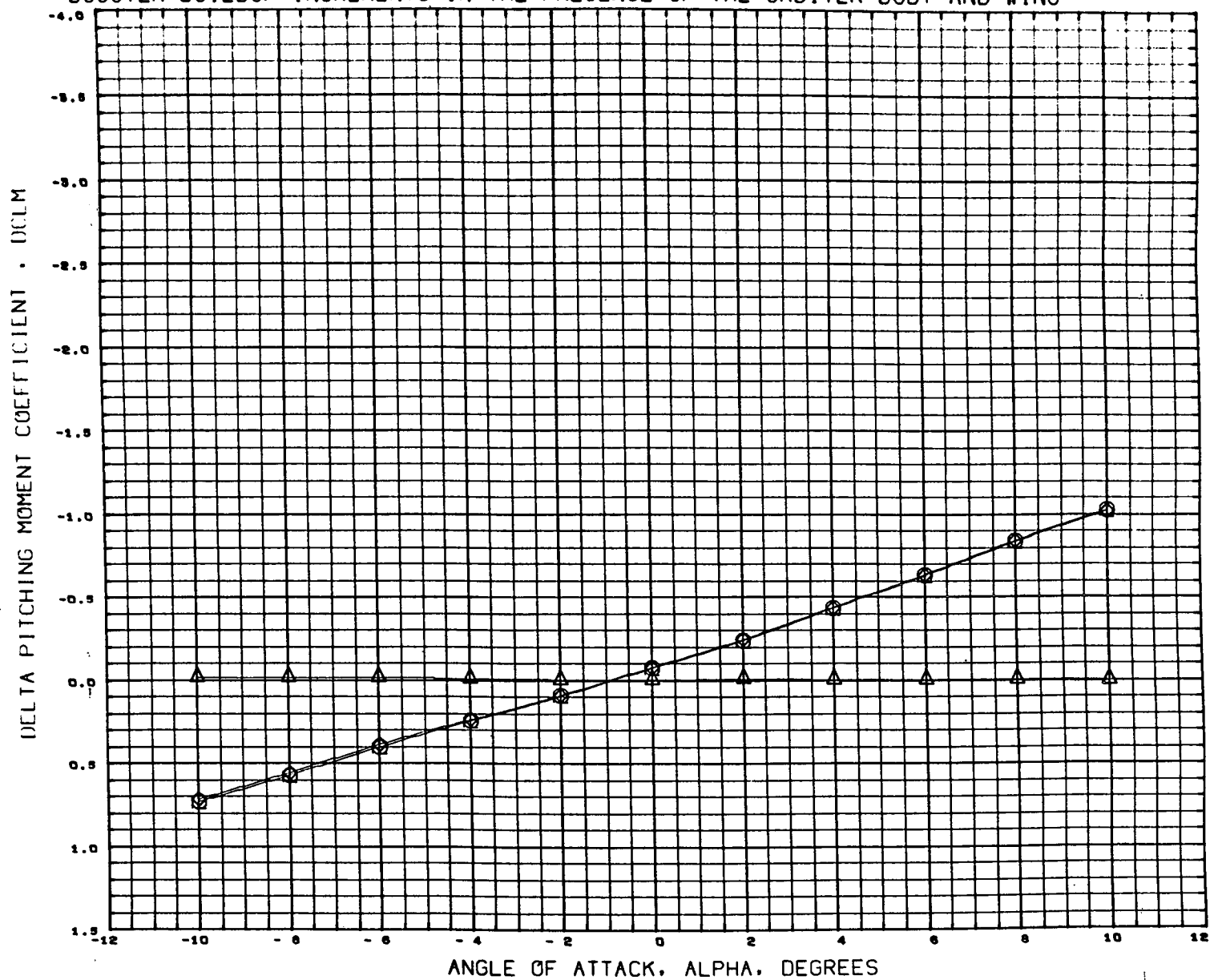
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|--|--|
| (A32206)  | A3209A-A3208A (B20W14 + B5) - (B20 + B5) |
| (A32207)  | A3212A-A3208A (B20C4B + B5) - (B20 + B5) |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 0.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.960

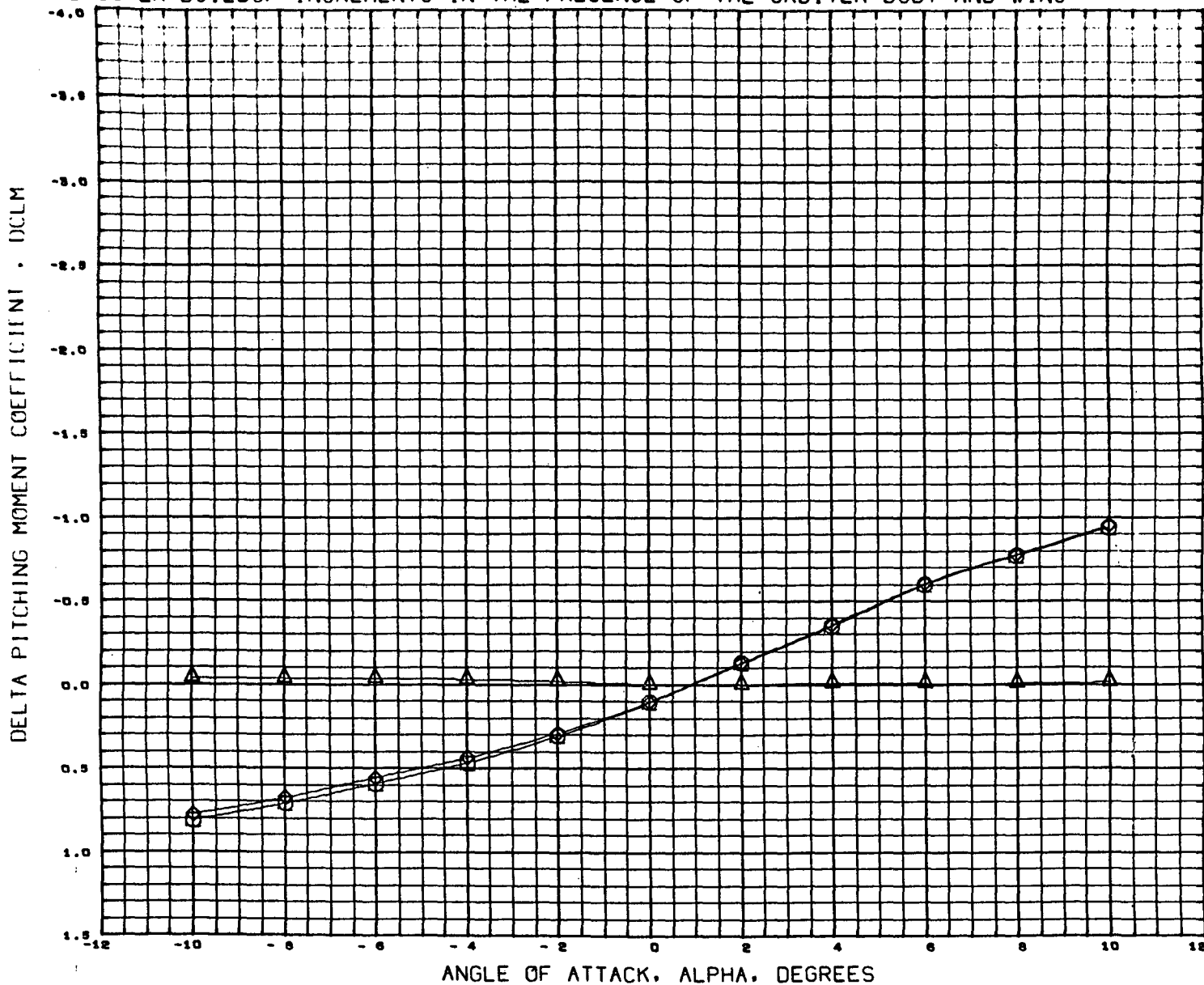
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING



| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|----------|--------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | ○ | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | △ | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (A32210) | ◇ | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | | XMRP | 0.0000 |
| | | | | | | | YMRP | 0.0000 |
| | | | | | | | ZMRP | 0.0000 |
| | | | | | | | SCALE | 0.0039 SCALE |

MACH 0.600

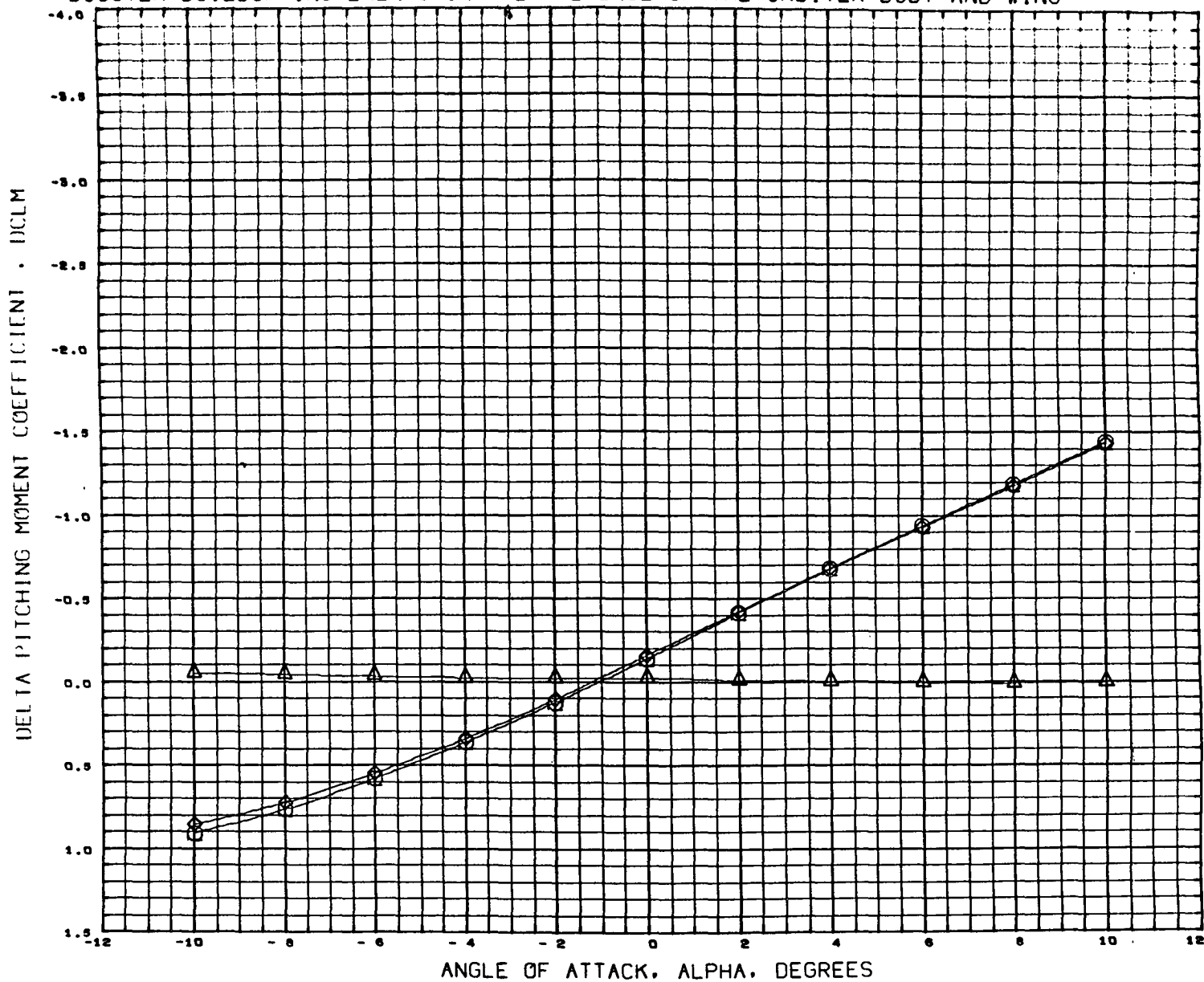
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6960 SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING

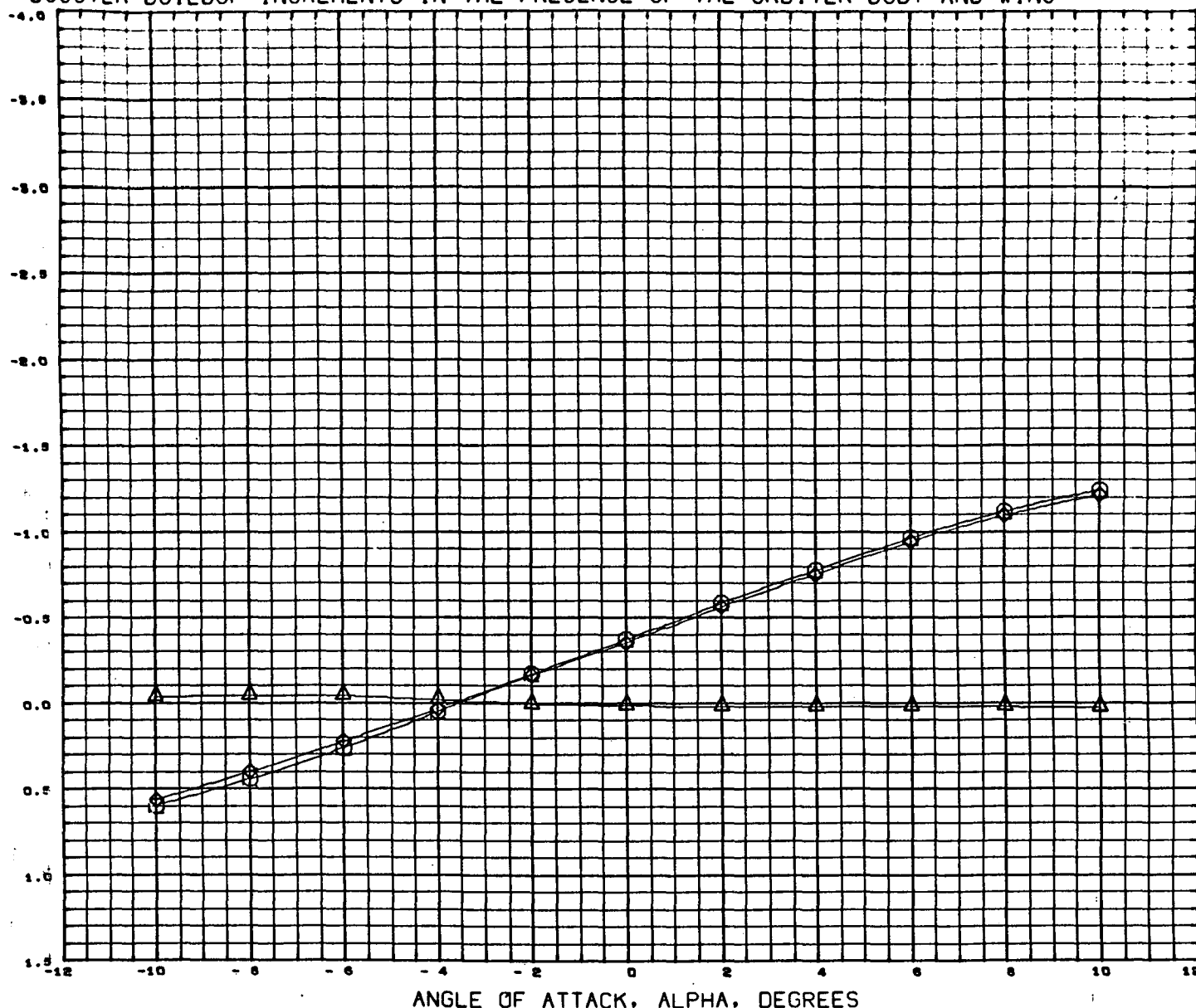


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0033 SCALE |

MACH 1.100

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING

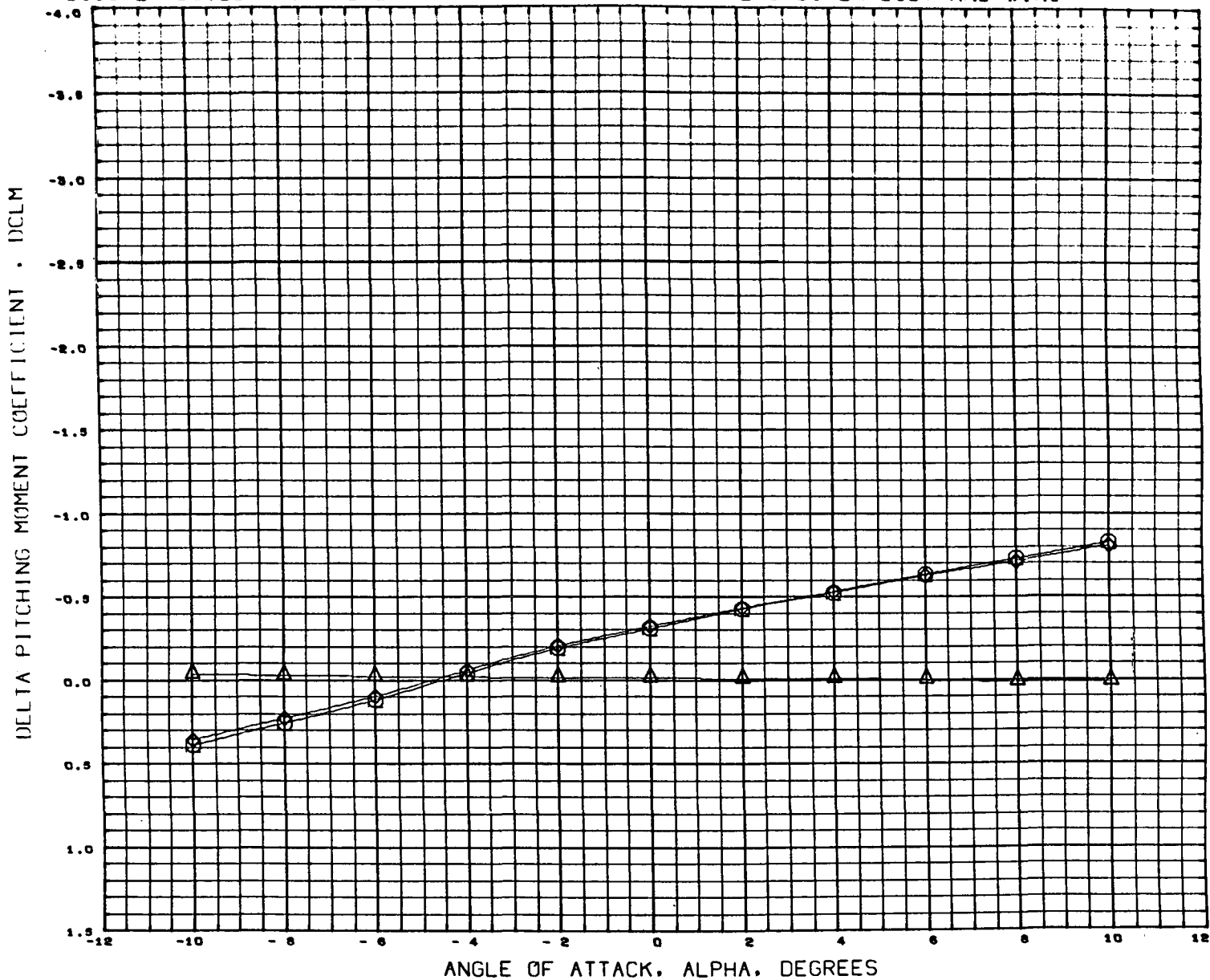
DELTA PITCHING MOMENT COEFFICIENT, DCLM



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------|--------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 | SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0990 | INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 1.460

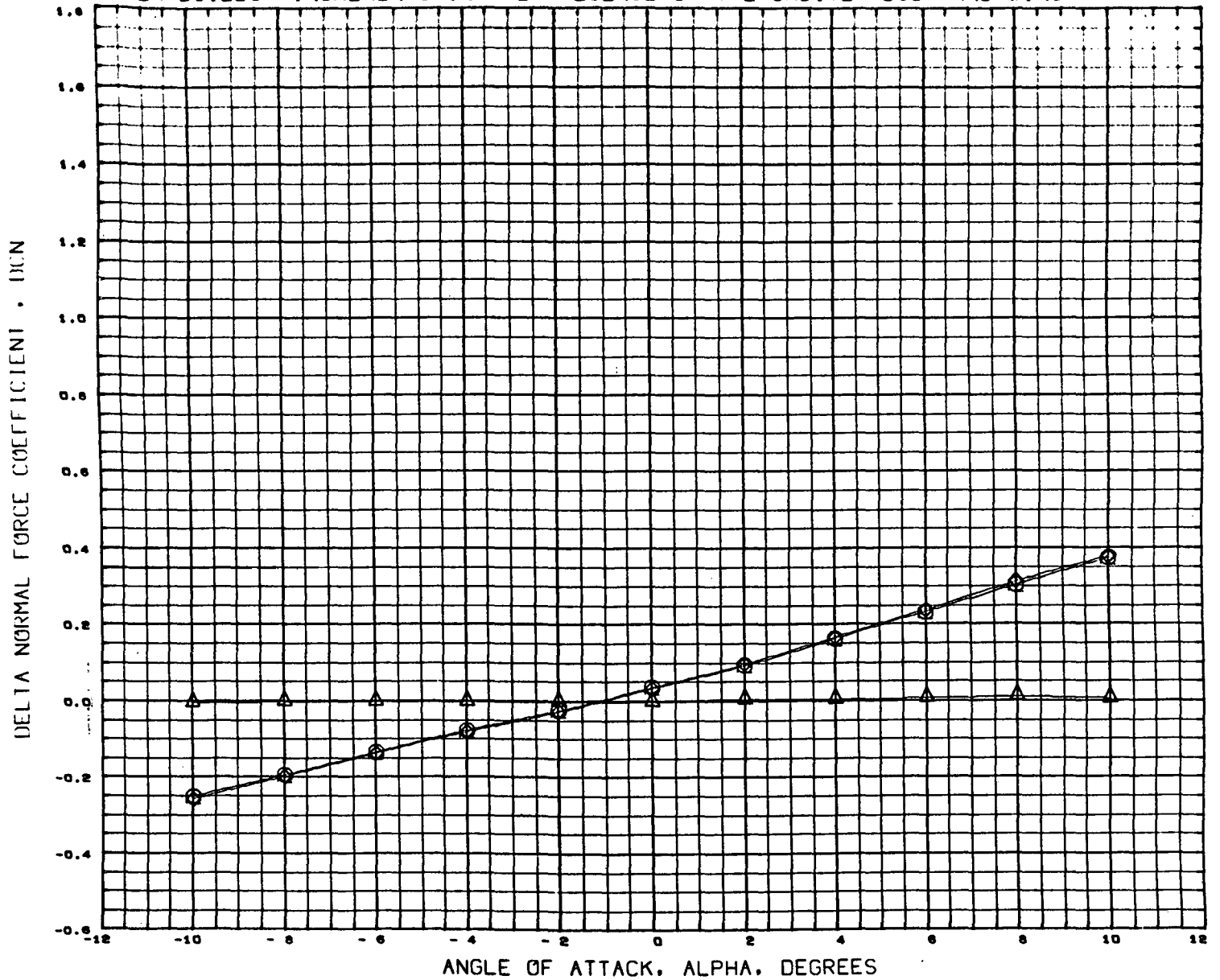
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING

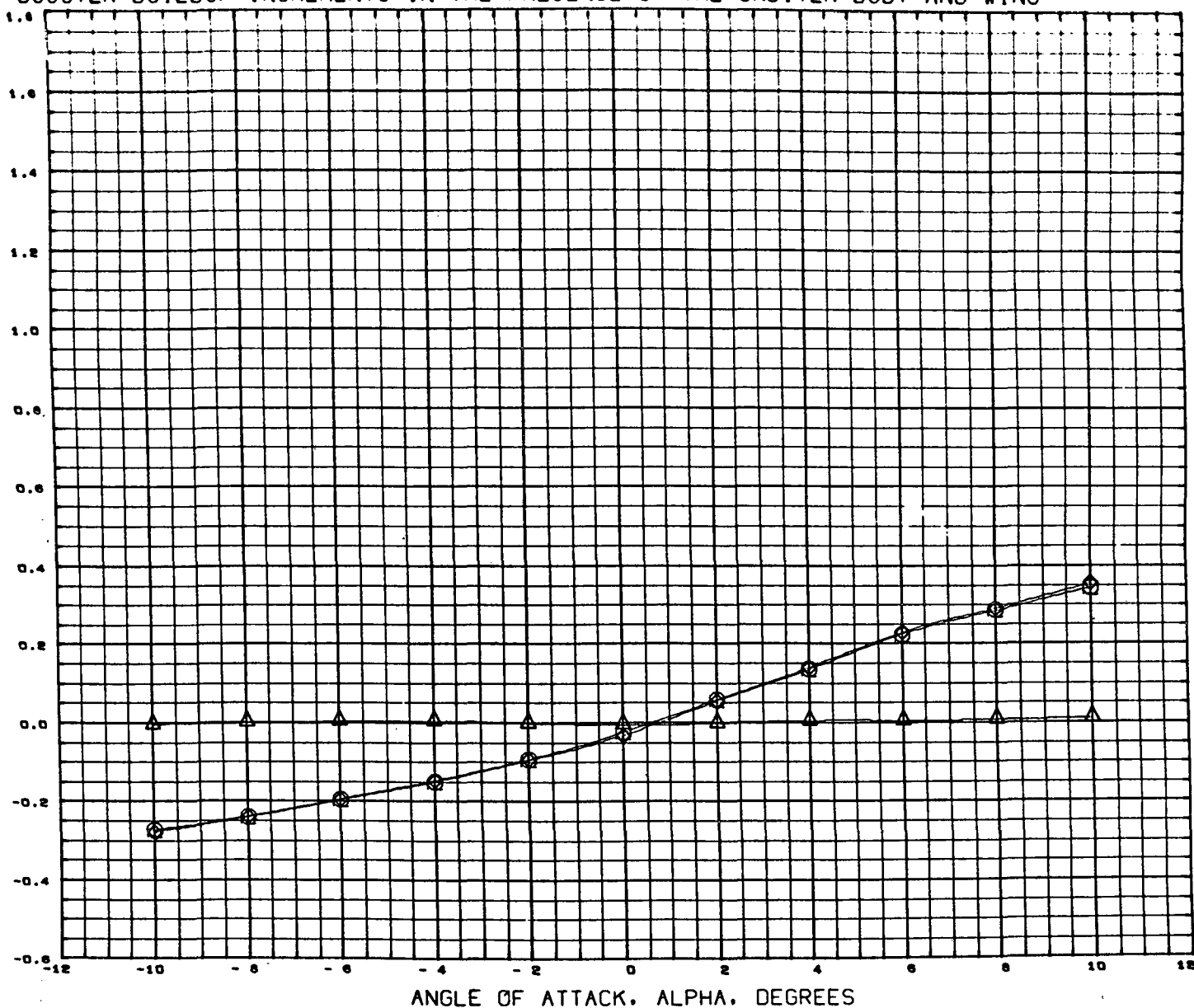


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING

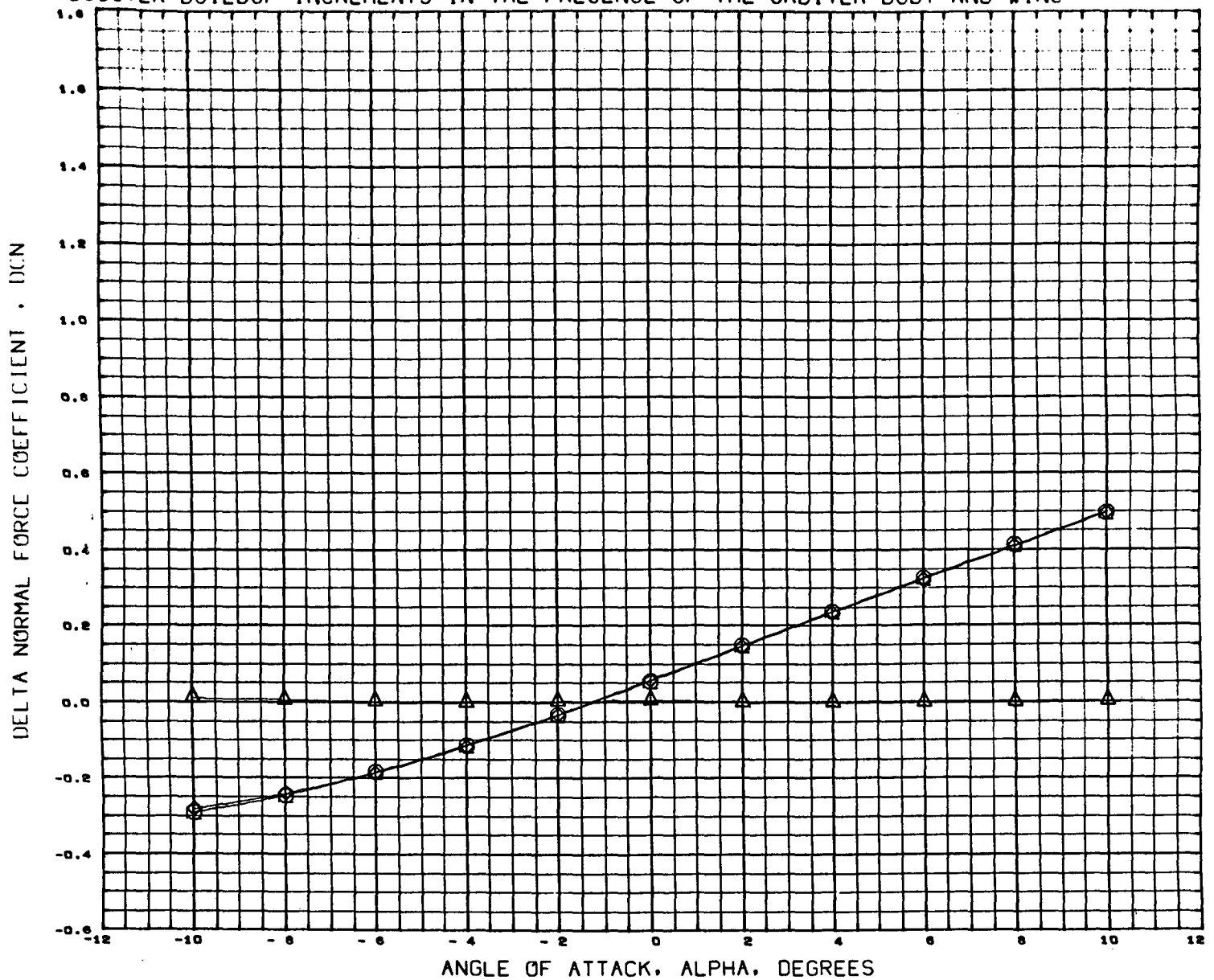
DELTA NORMAL FORCE COEFFICIENT - DCN



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------|--------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 | SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0990 | INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 0.900

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING

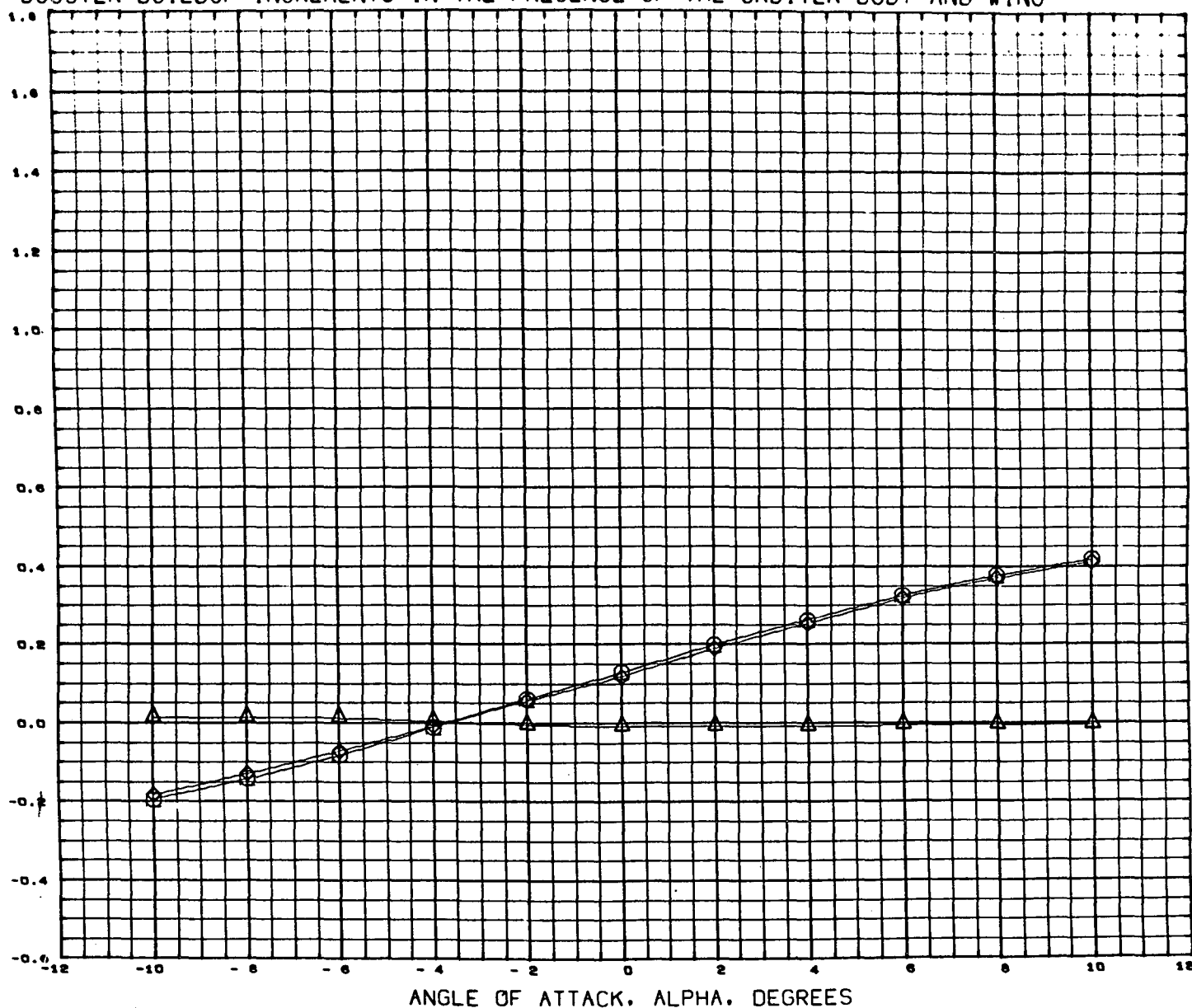


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBIN | ELVOR | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|-------|-------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.100

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING

DELTA NORMAL FORCE COEFFICIENT, DCN



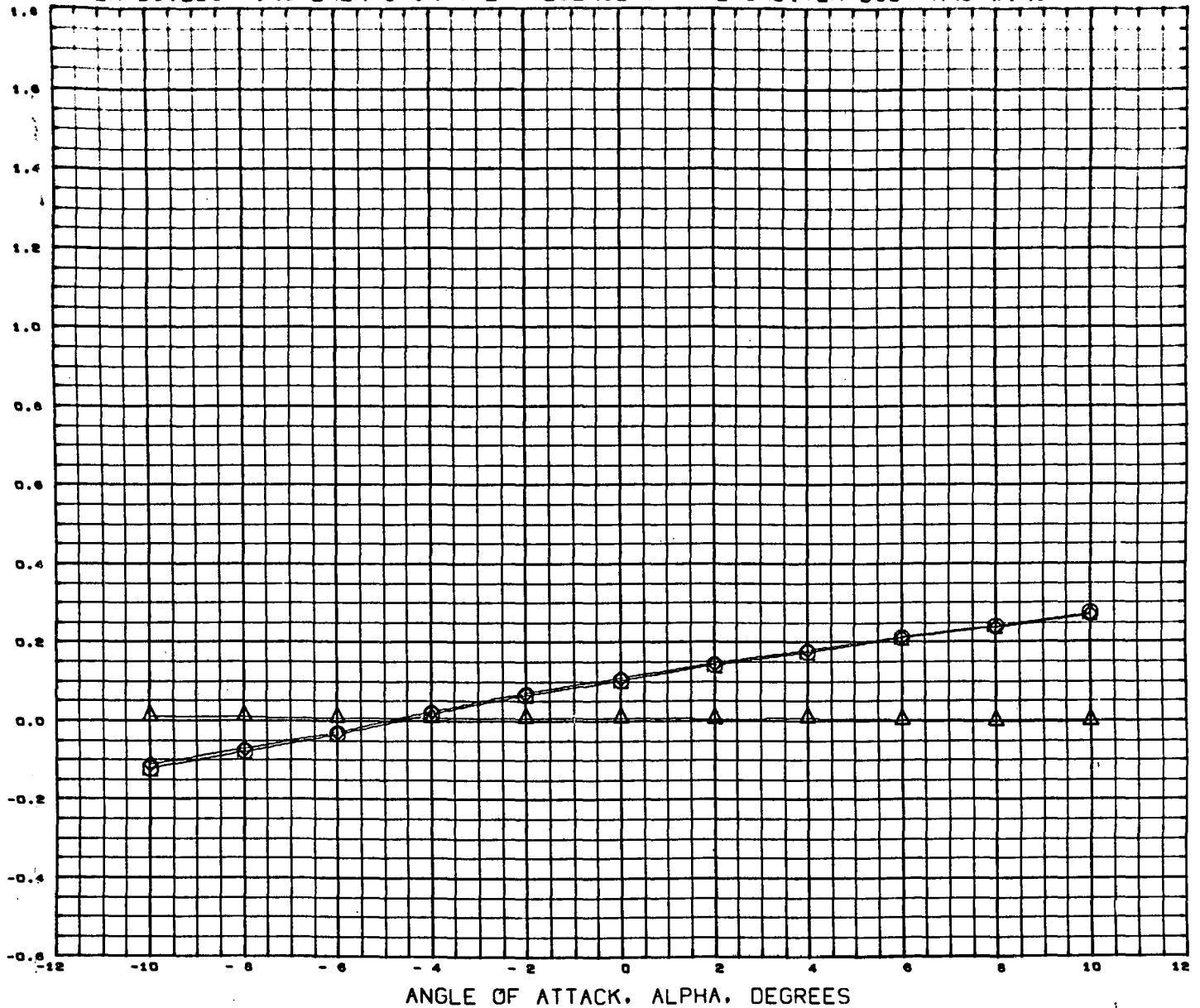
ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.460

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING

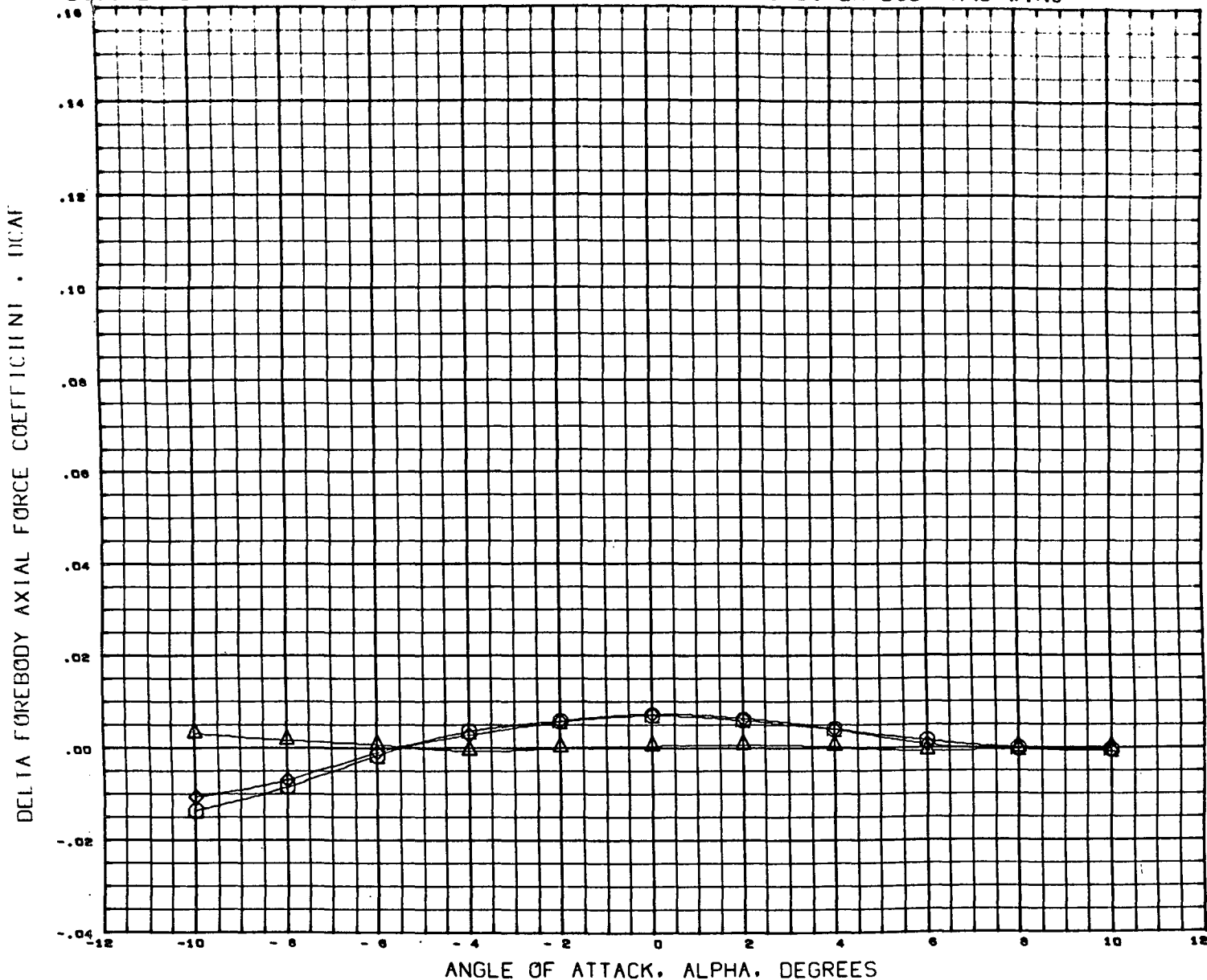
DELTA NORMAL FORCE COEFFICIENT, DCN



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0950 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

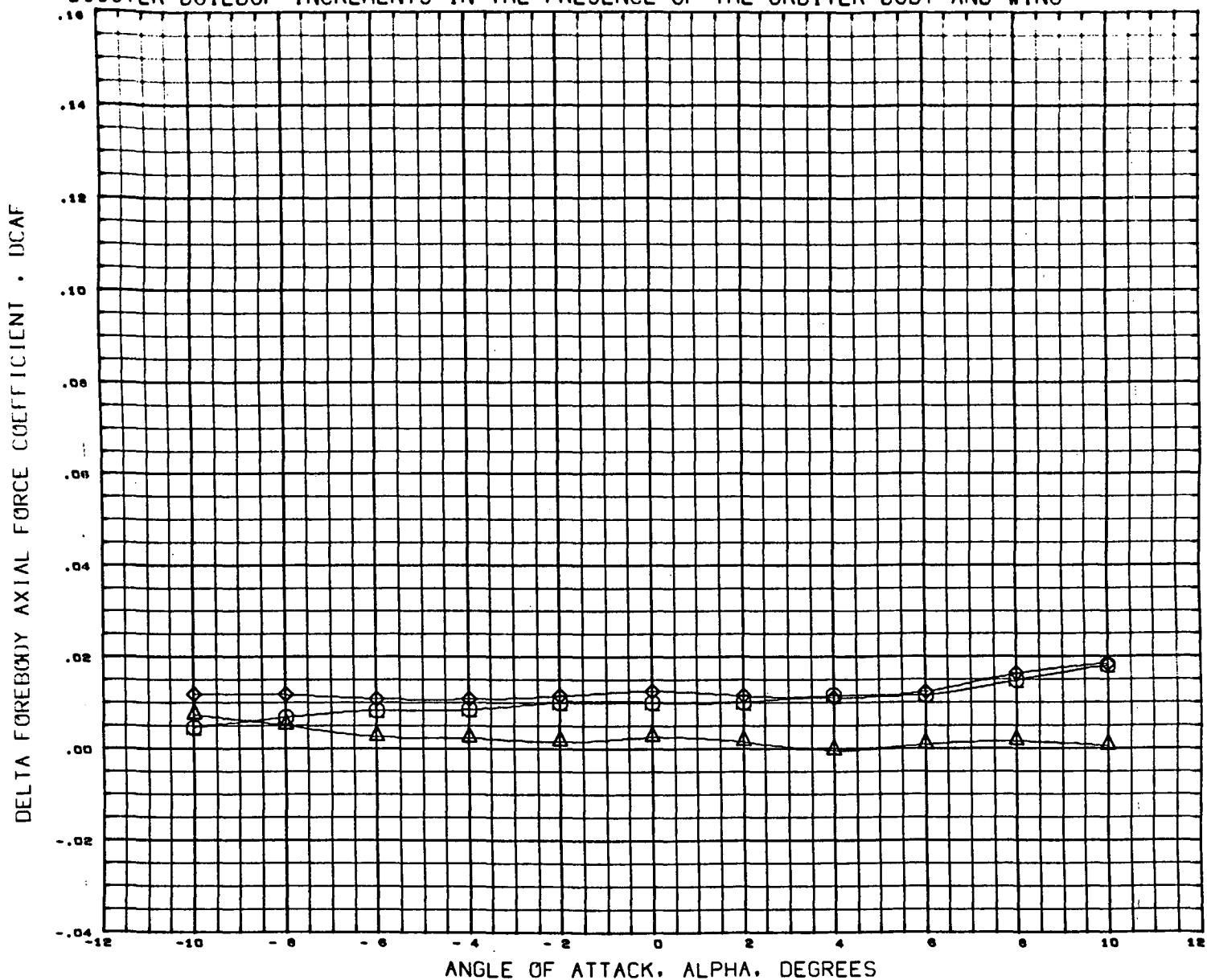
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6960 SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

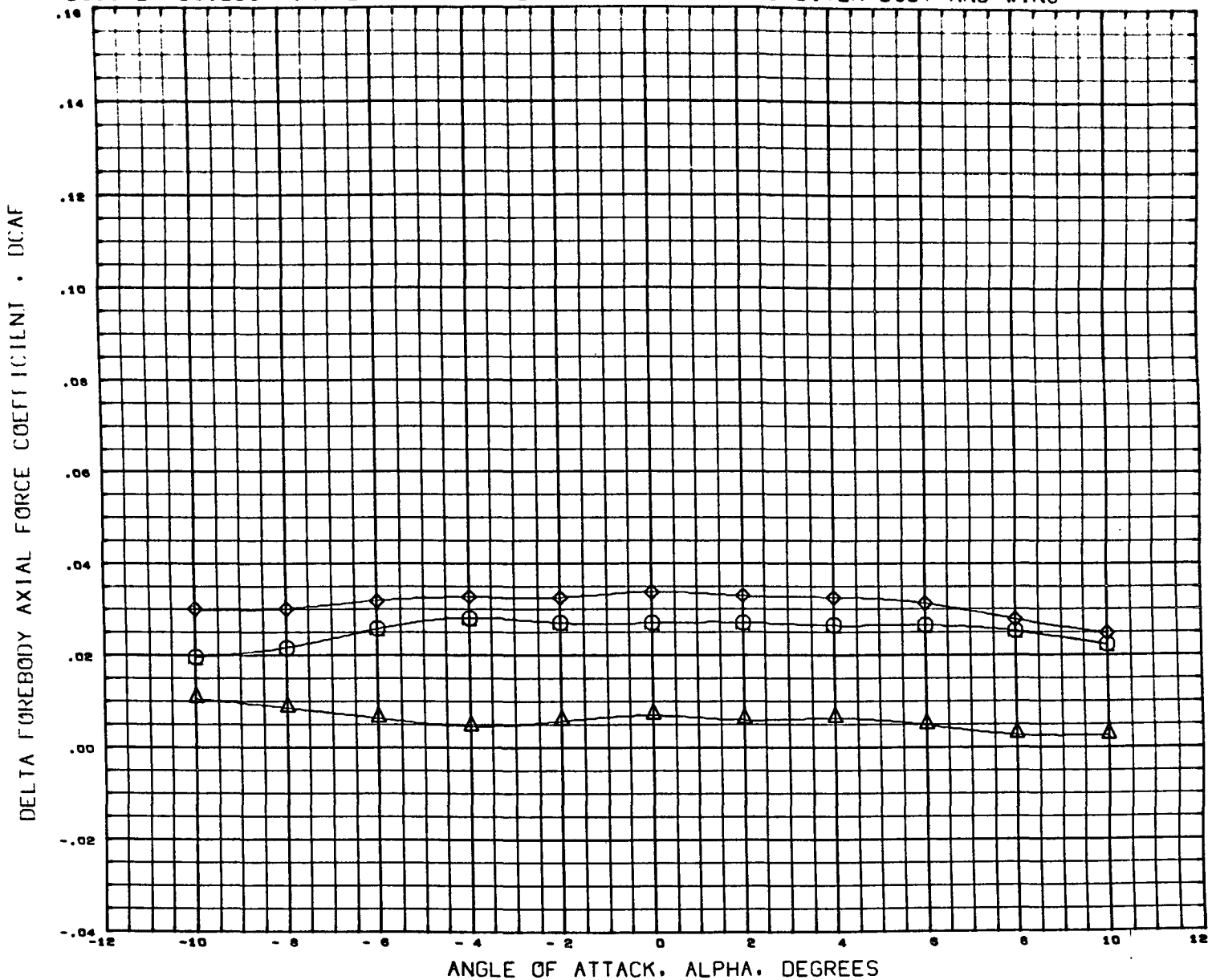
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING

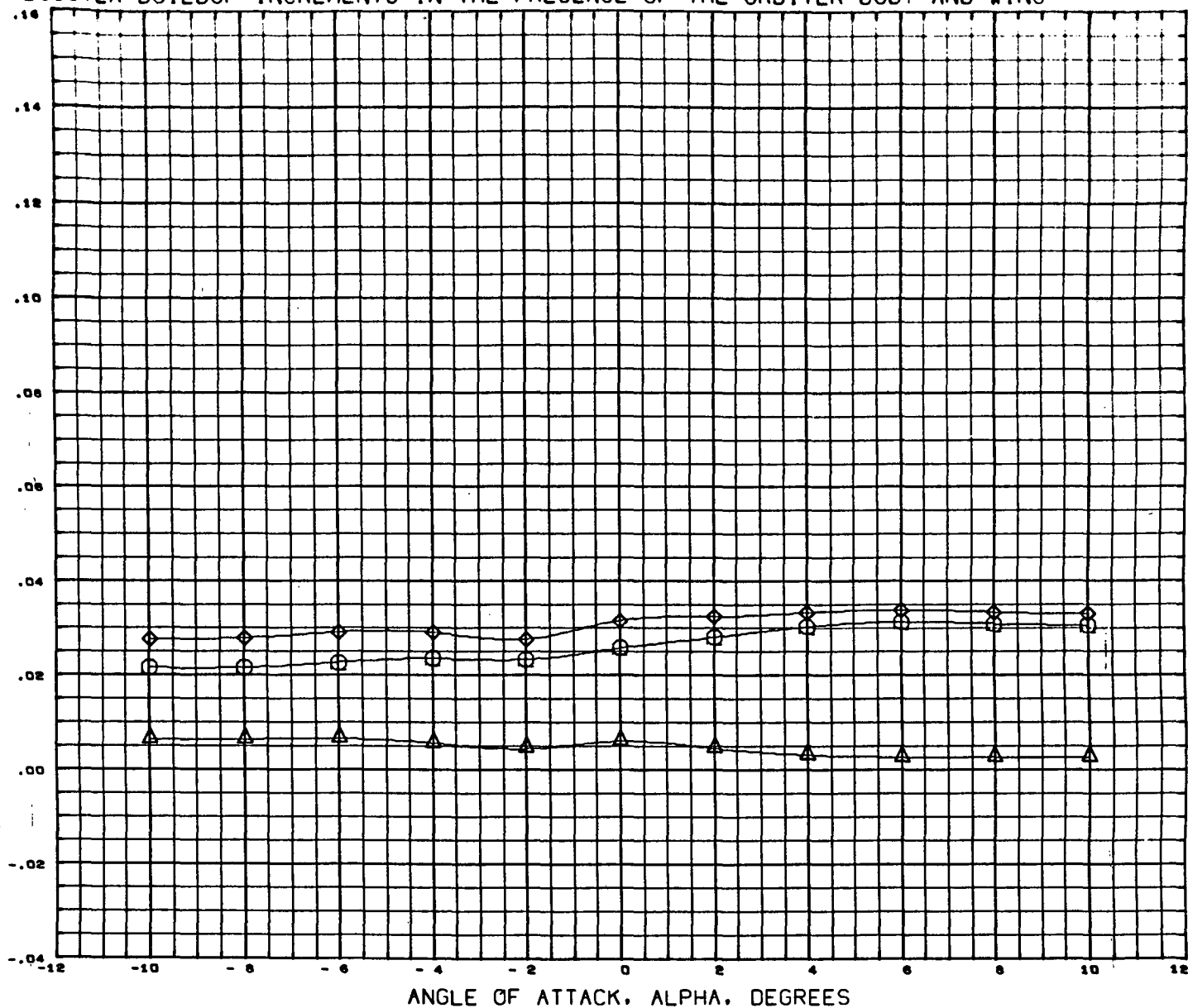


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | A3211A-A3210A (B20C48W14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32210) | A3211A-A3213A (B20C48W14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.100

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING

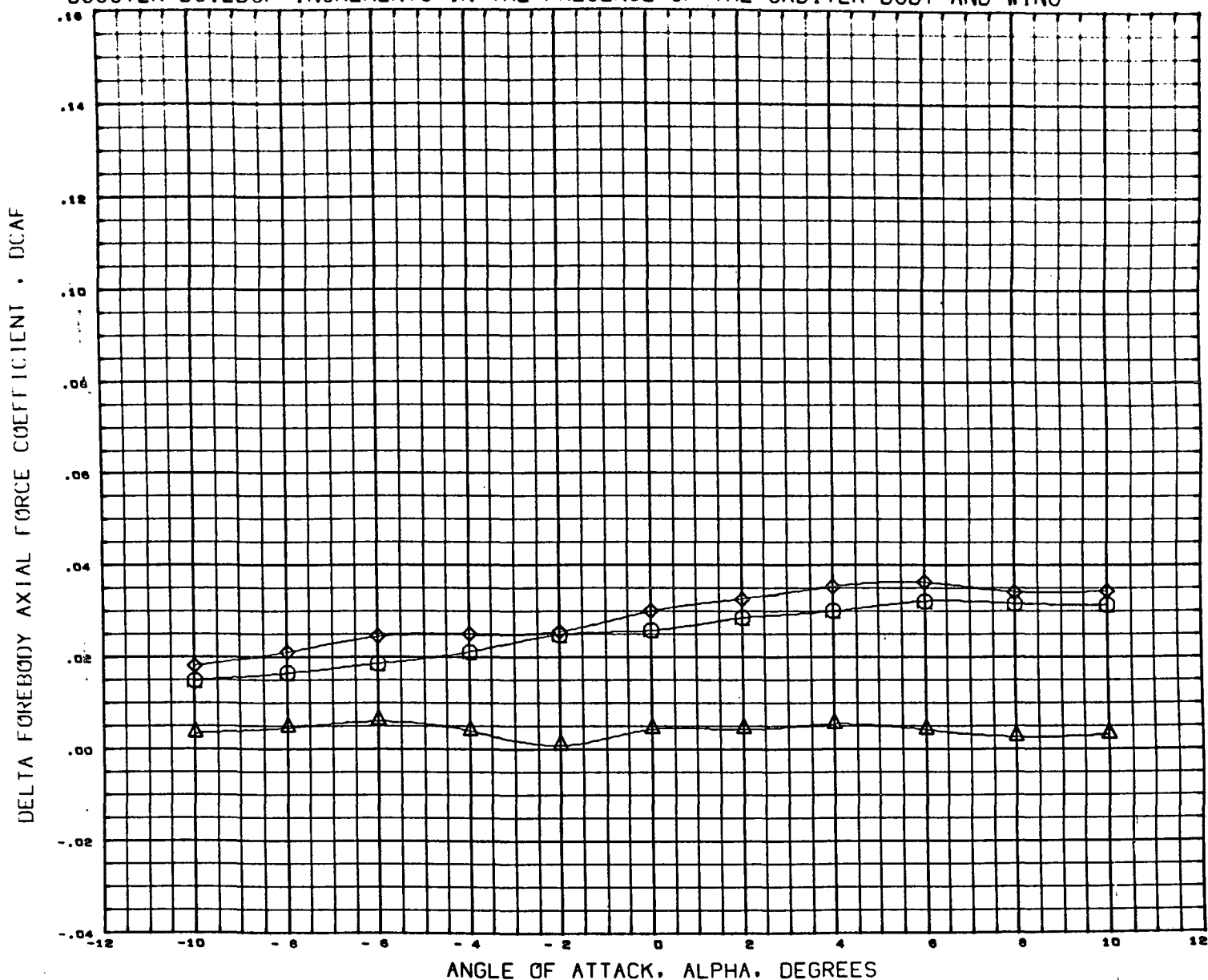
DELTA FOREBODY AXIAL FORCE COEFFICIENT - DCAF



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (A32210) | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.460

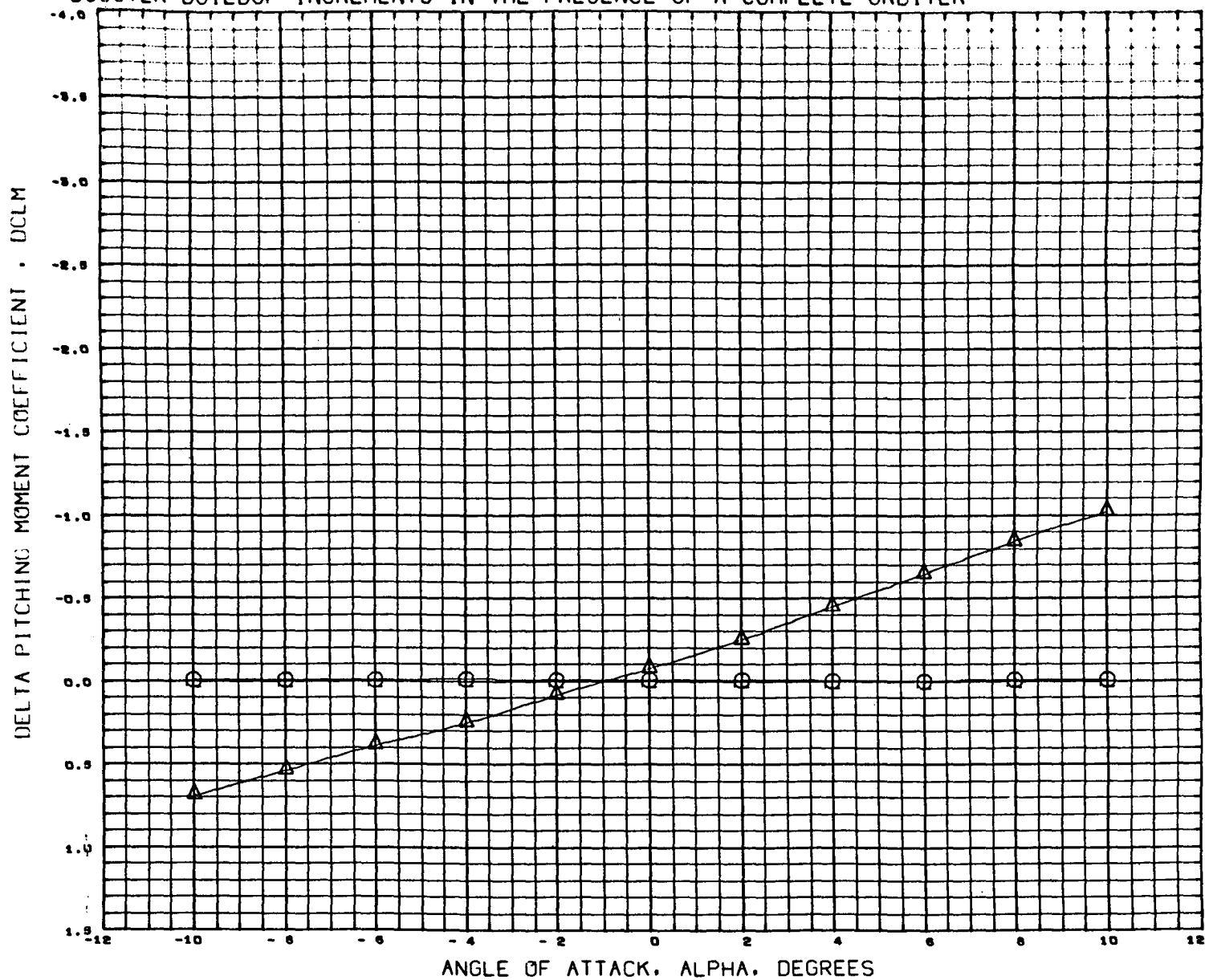
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF THE ORBITER BODY AND WING



| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|----------|--------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32208) | ○ | A3210A-A3213A (B20W14 + B5W17) - (B20 + B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (A32209) | △ | A3211A-A3210A (B20C4BW14+B5W17) - (B20W14+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0930 INCHES |
| (A32210) | ◇ | A3211A-A3213A (B20C4BW14+B5W17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | BREF | 6.0990 INCHES |
| | | | | | | | XMRP | 0.0000 |
| | | | | | | | YMRP | 0.0000 |
| | | | | | | | ZMRP | 0.0000 |
| | | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

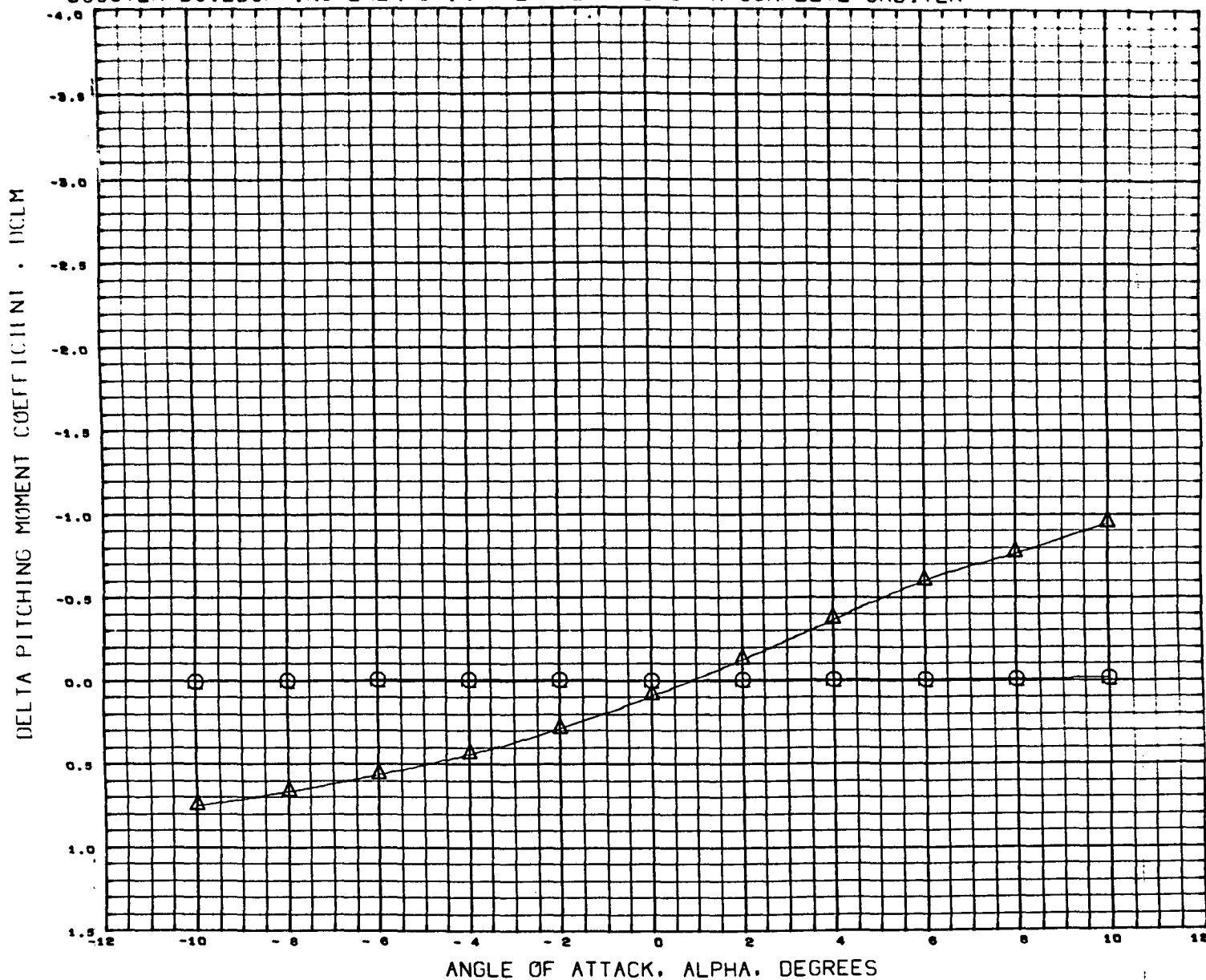
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------|--------|
| (A3211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 | SQ IN |
| (A3212) | 22A-15A (B20C4B+W14V8+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 | INCHES |
| | | | | | | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 0.600

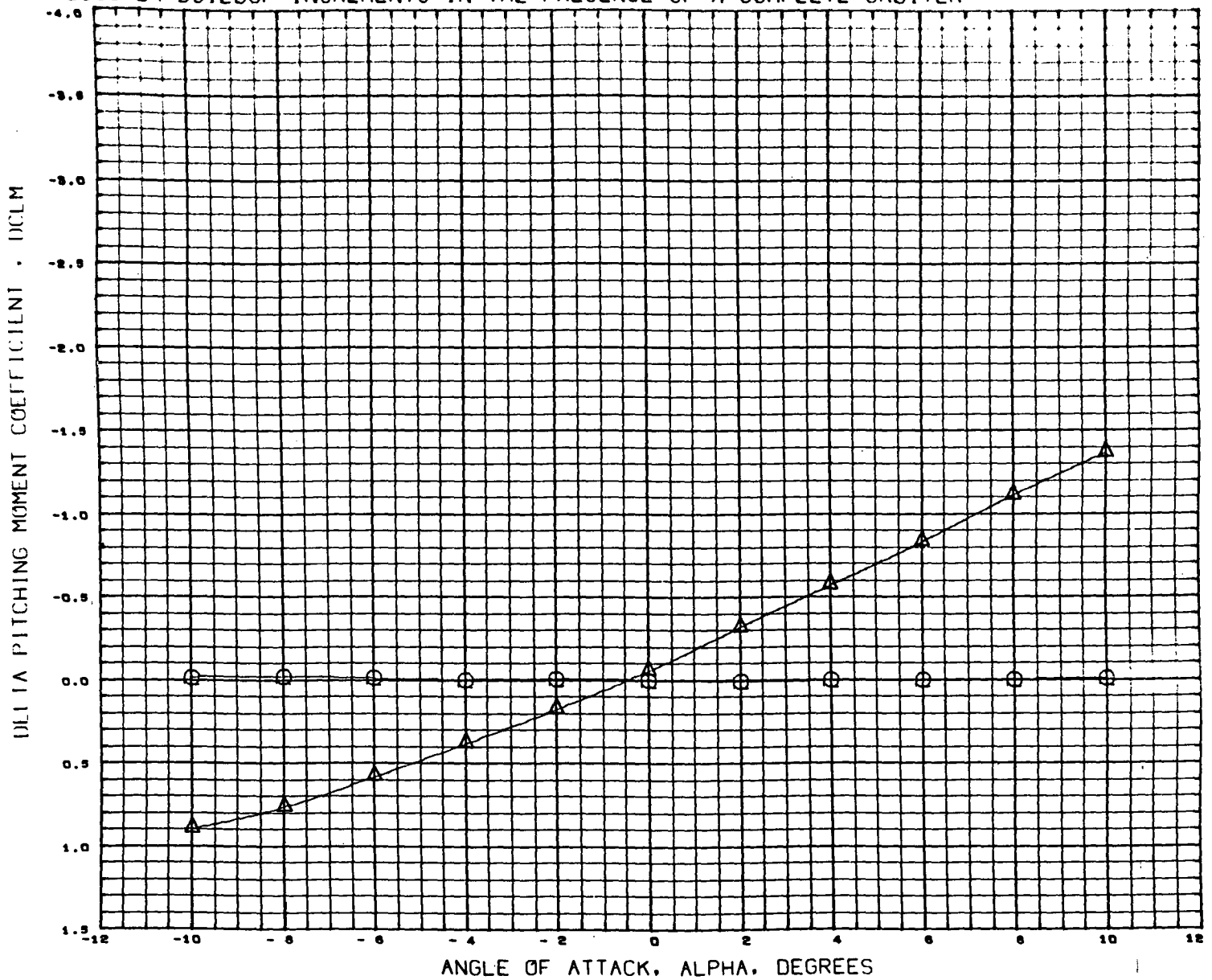
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4BW14V6+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

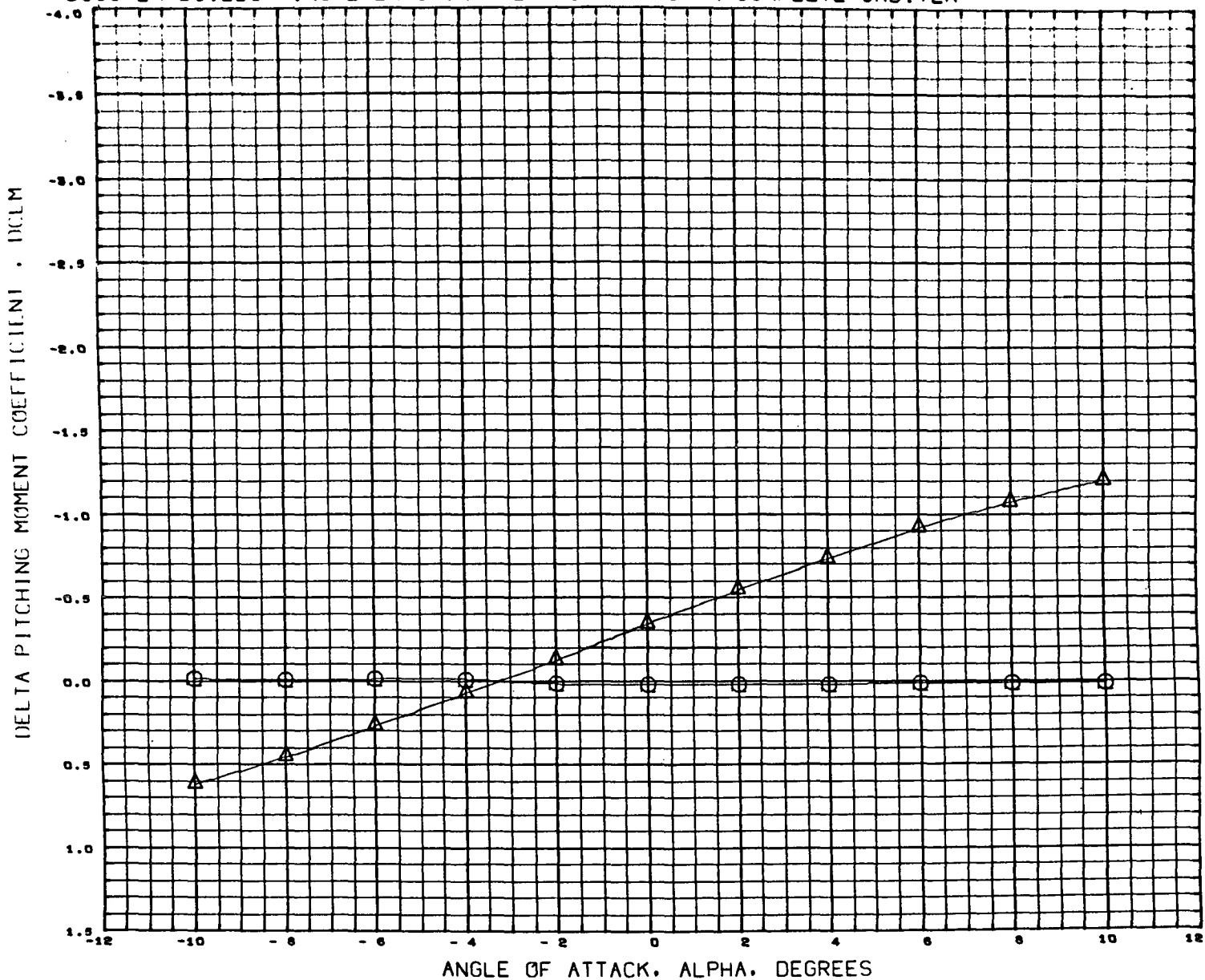
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4B+W14V8+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.100

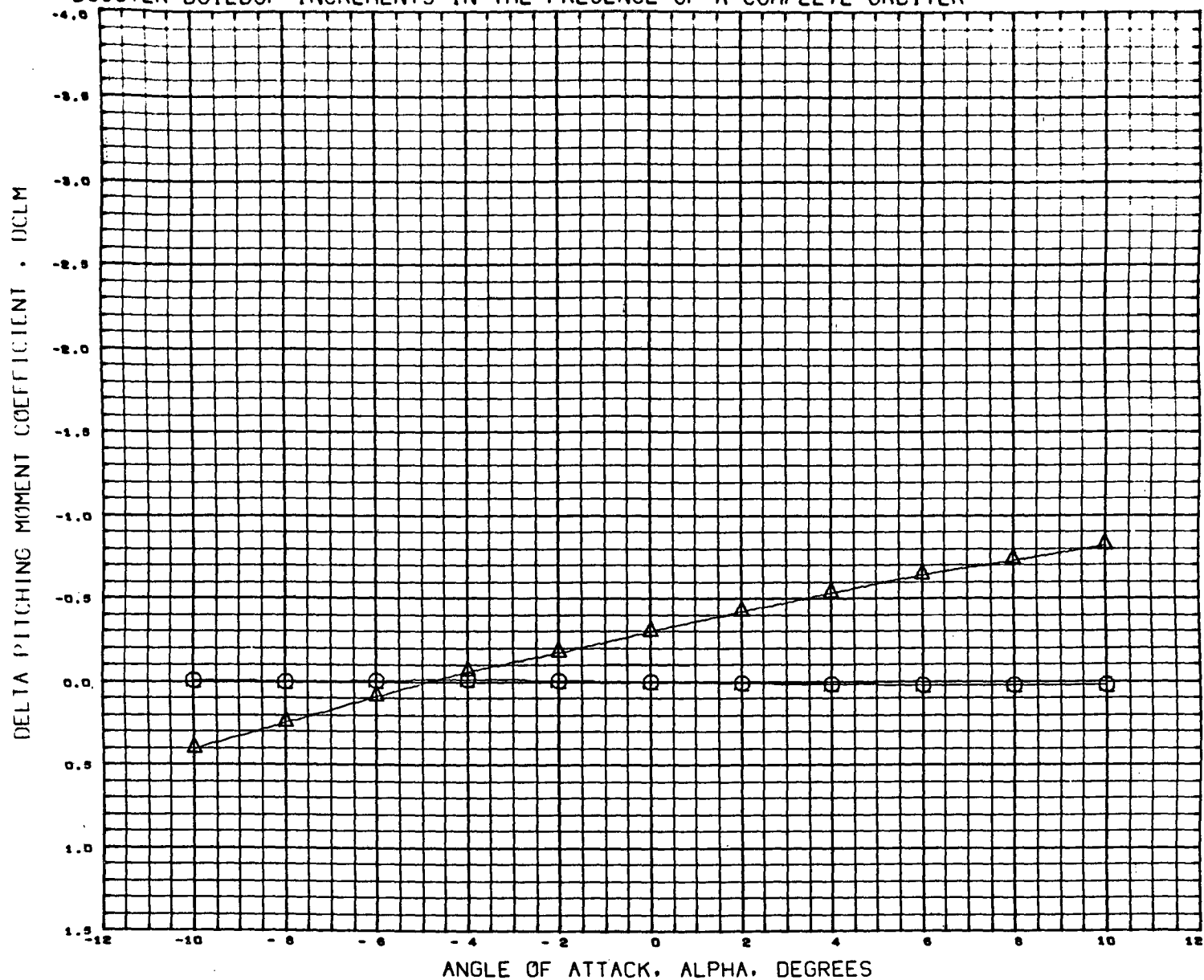
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4B+W14V8+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.460

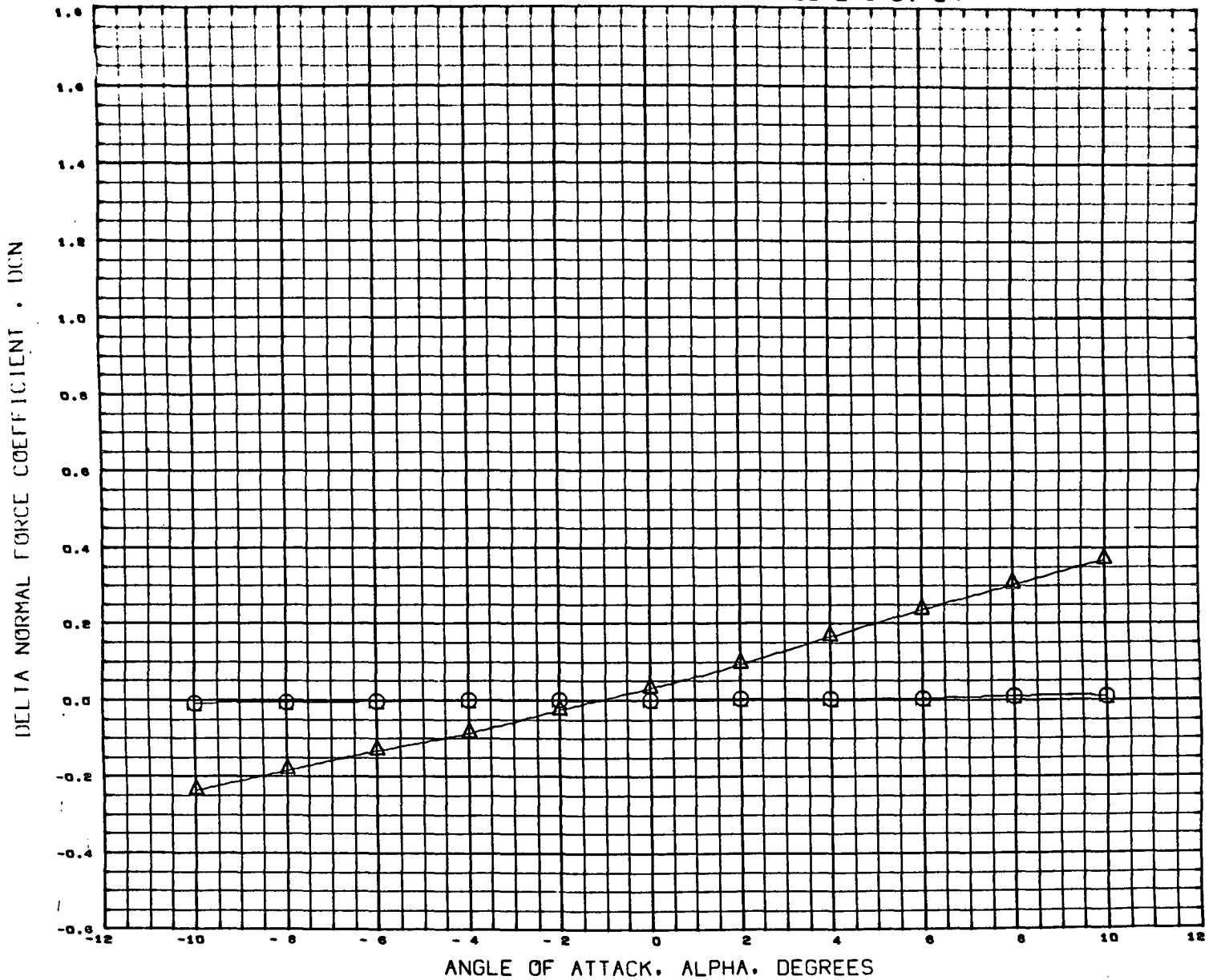
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4BW14V8+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 0.0990 INCHES |
| | | | | | | XMHP | 0.0000 |
| | | | | | | YMHP | 0.0000 |
| | | | | | | ZMHP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER

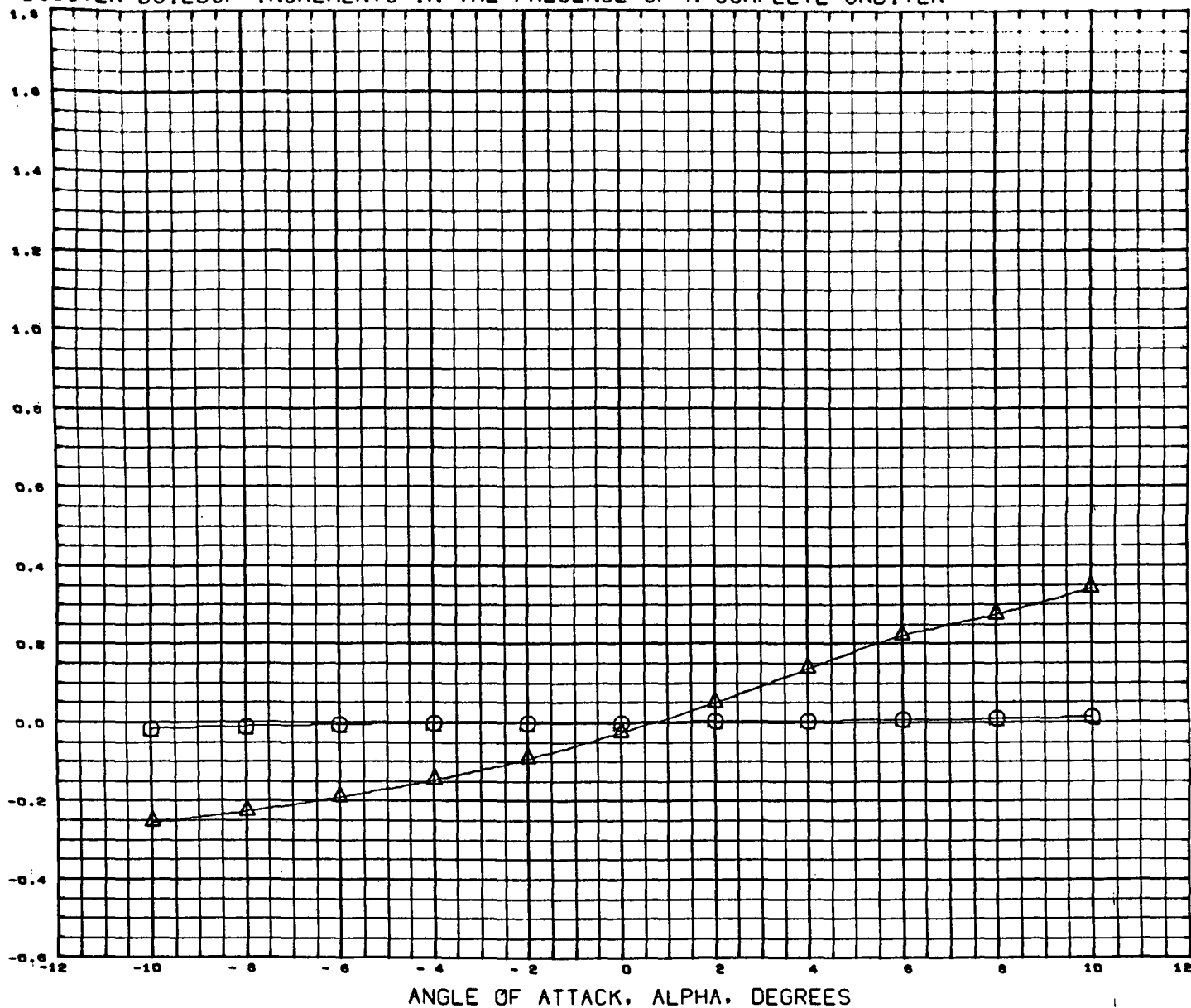


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4BW14V6+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRF | 0.0000 |
| | | | | | | YMRF | 0.0000 |
| | | | | | | ZMRF | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER

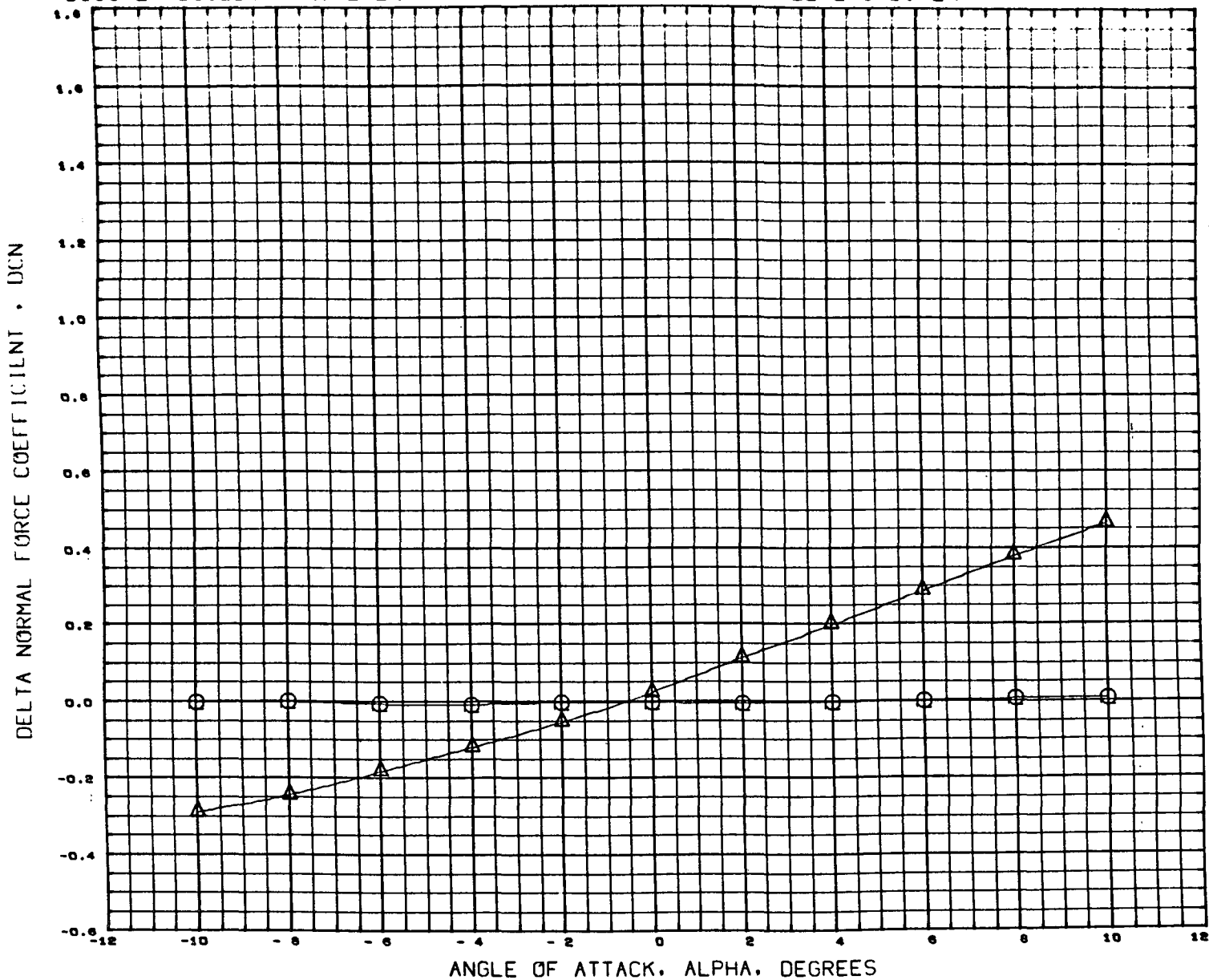
DELTA NORMAL FORCE COEFFICIENT - DCN



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4BW14V8+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

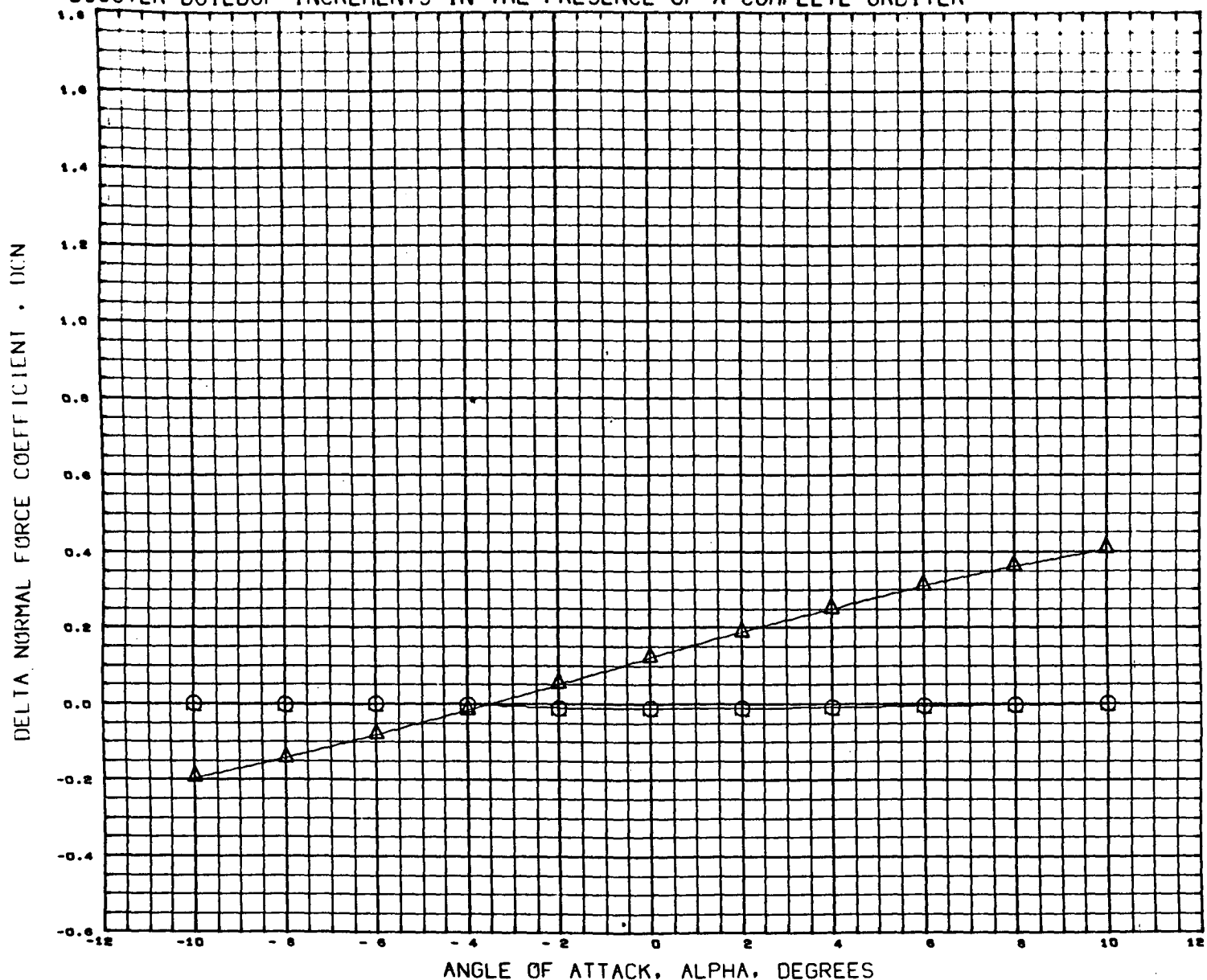
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4BW14V8+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.100

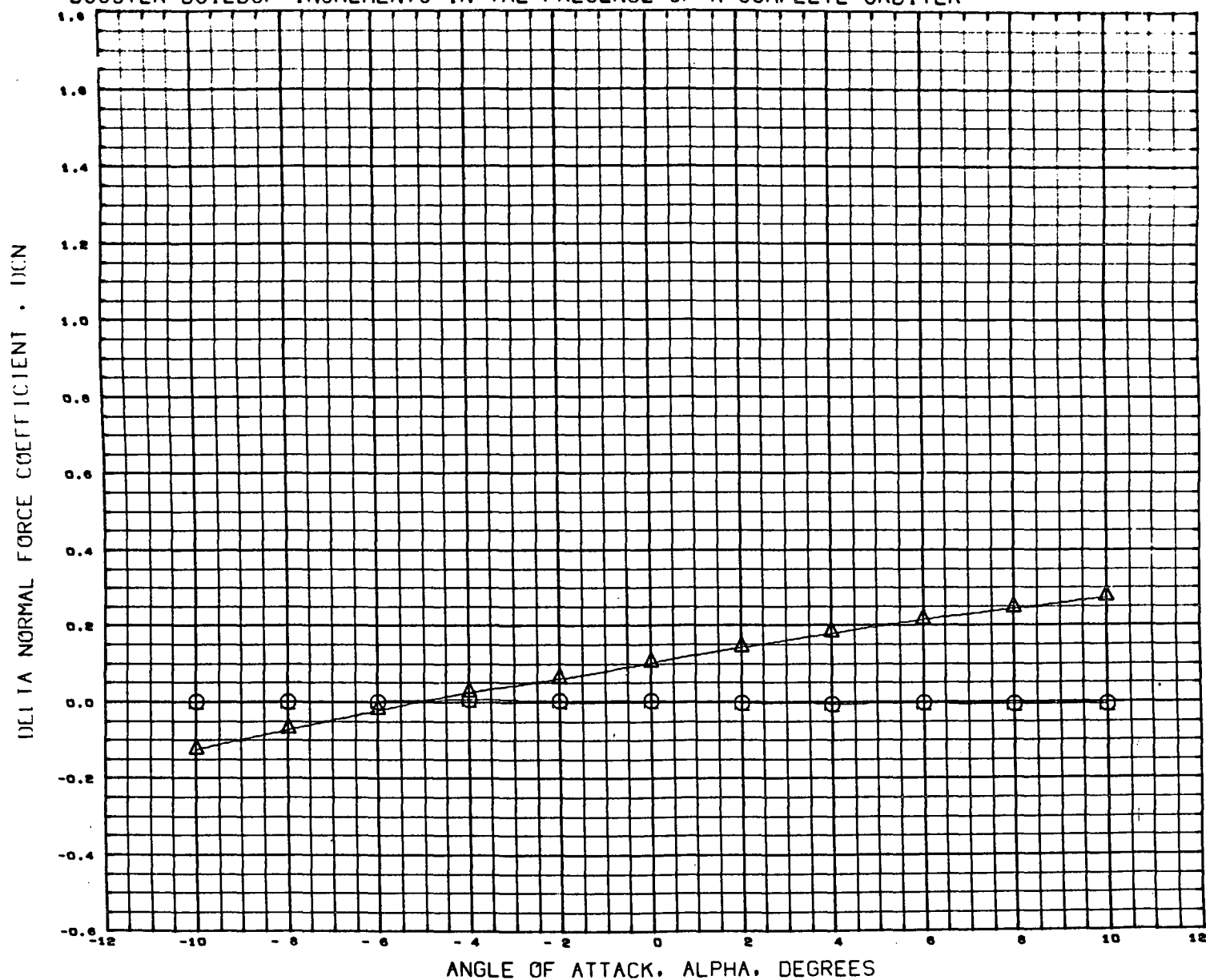
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4BW14V8+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0033 SCALE |

MACH 1.460

BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER

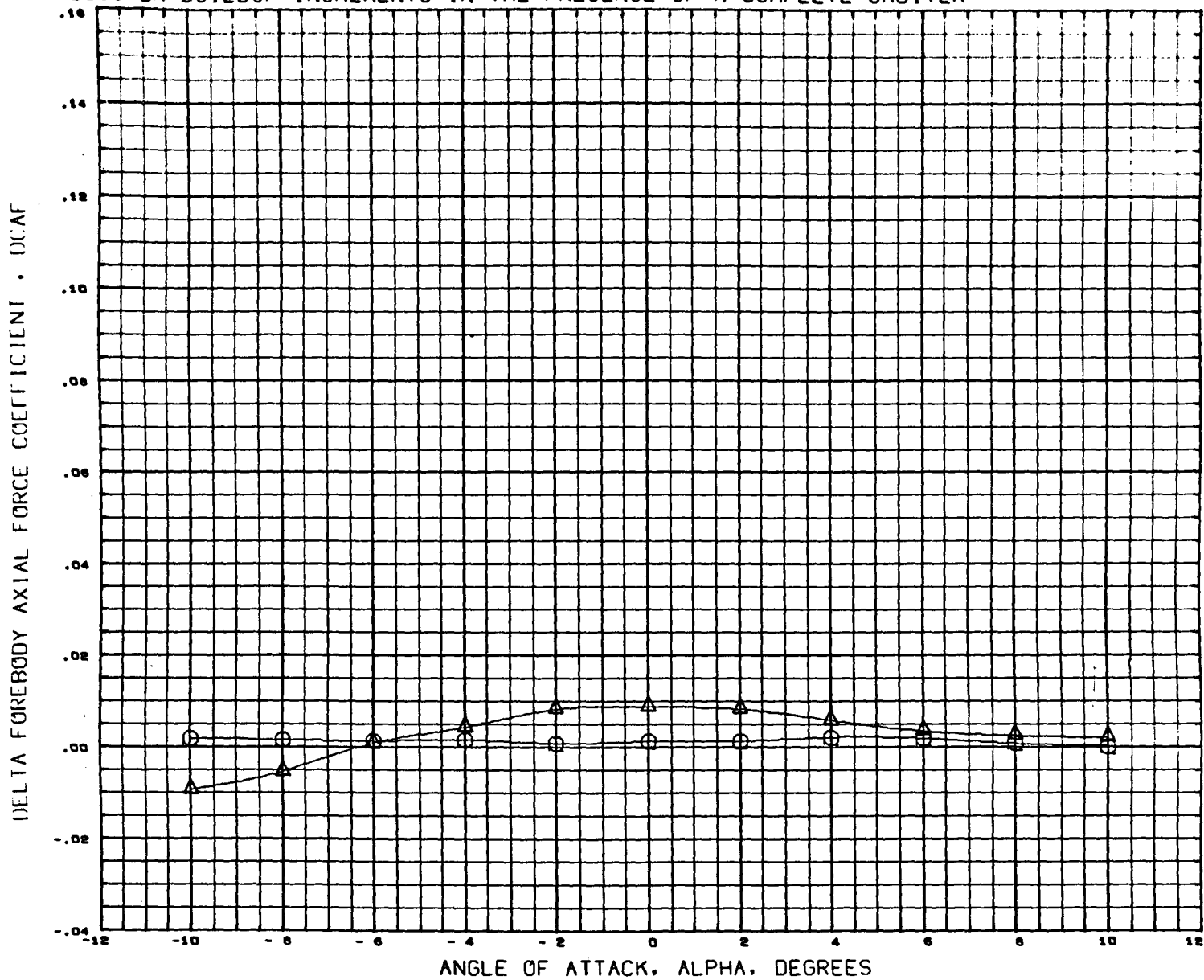


ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17)-(B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 19.6960 SQ IN |
| (A32212) | 22A-15A (B20C4BW14V8+B5W17V17)-(B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

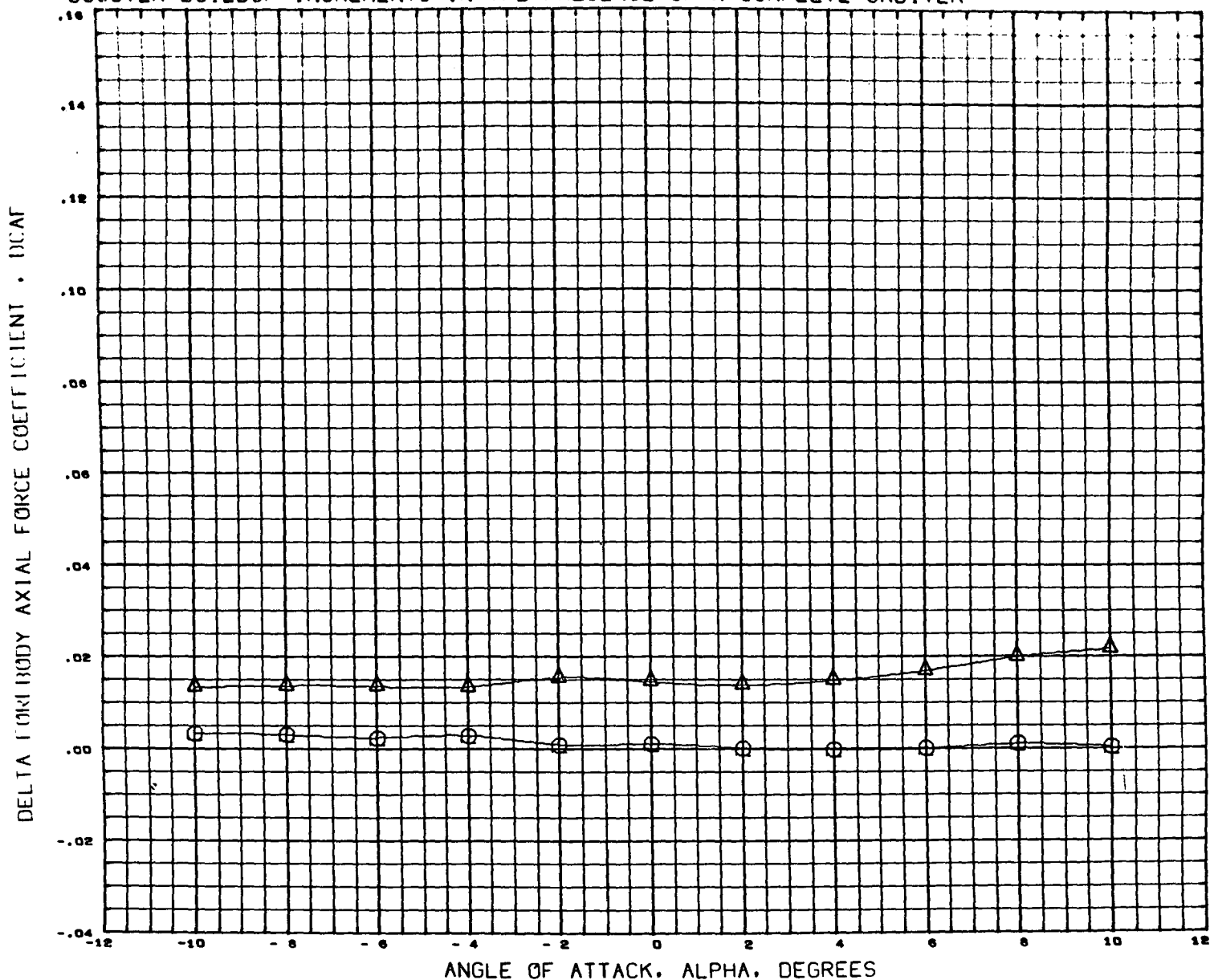
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4BW14V8+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

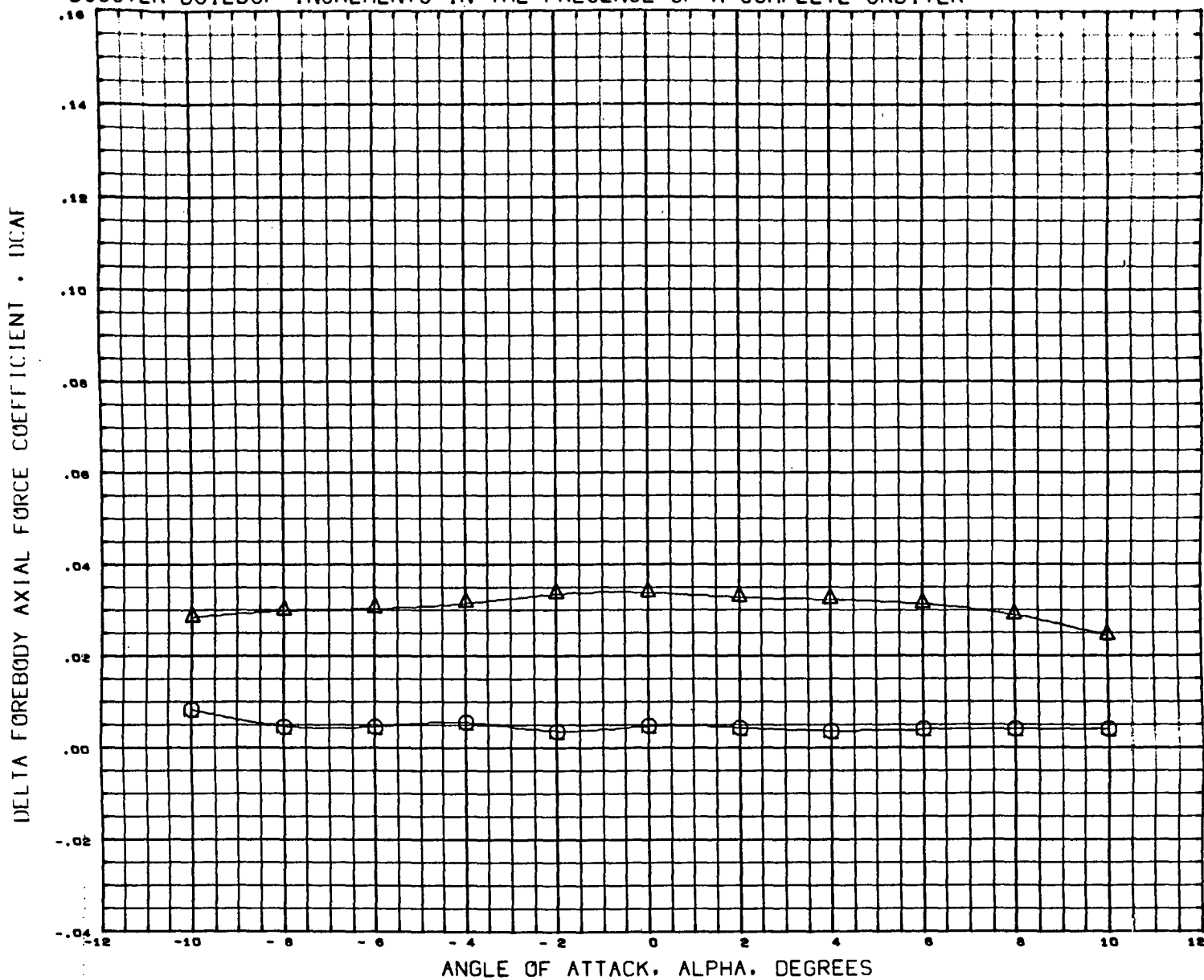
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4BW14V8+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

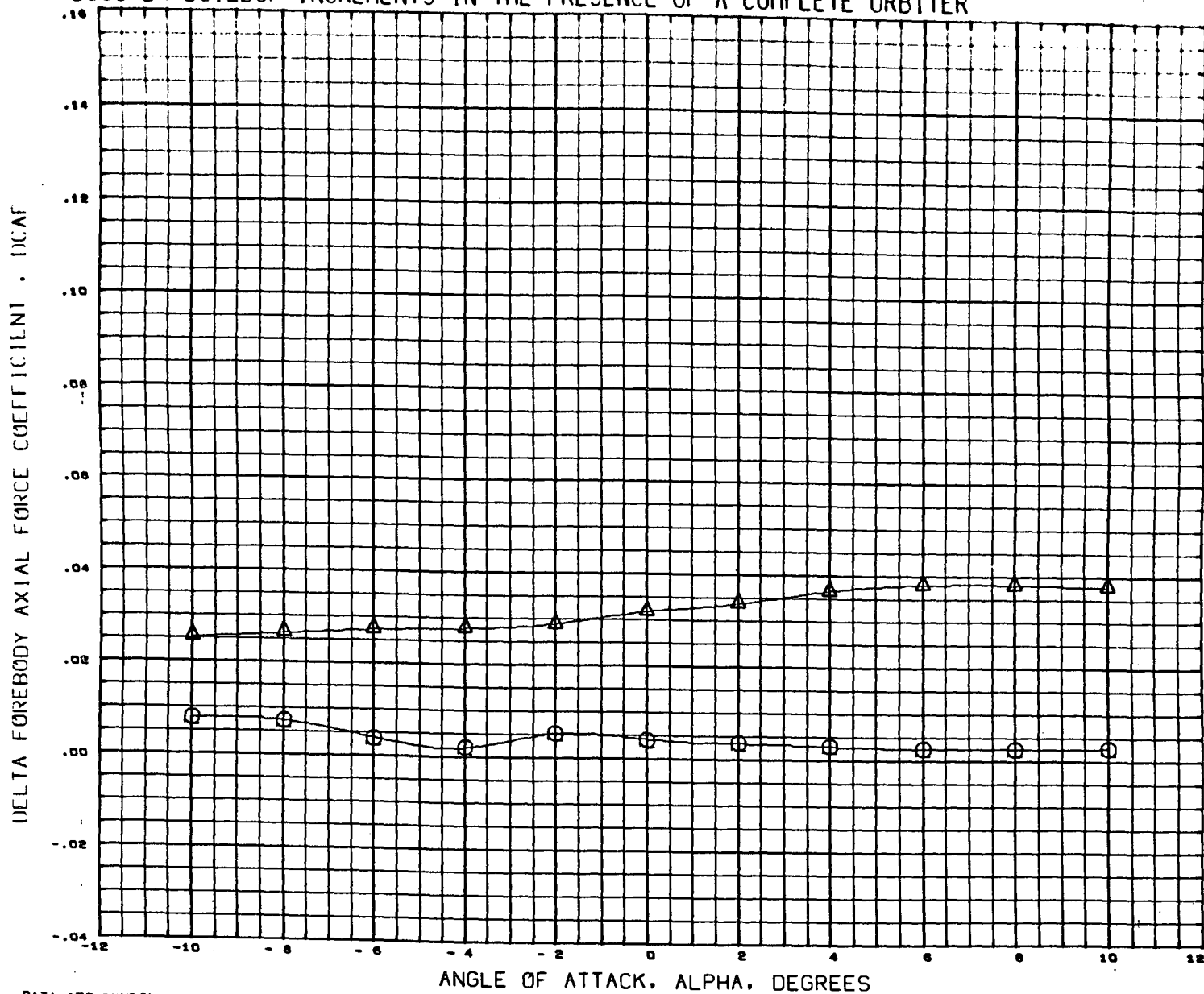
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17)-(B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4B+W14V8+B5W17V17)-(B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0033 SCALE |

MACH 1.100

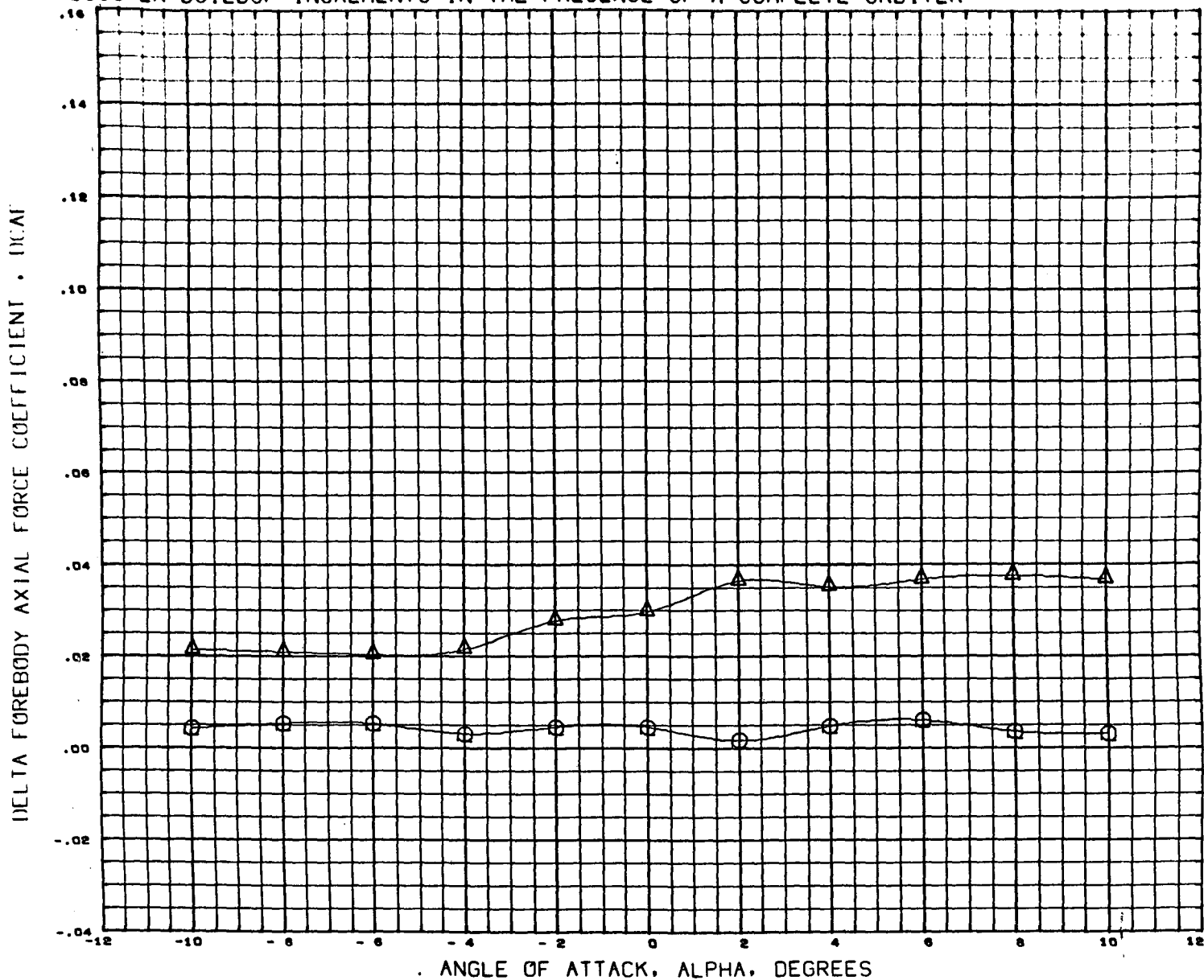
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32212) | 22A-15A (B20C4B+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.460

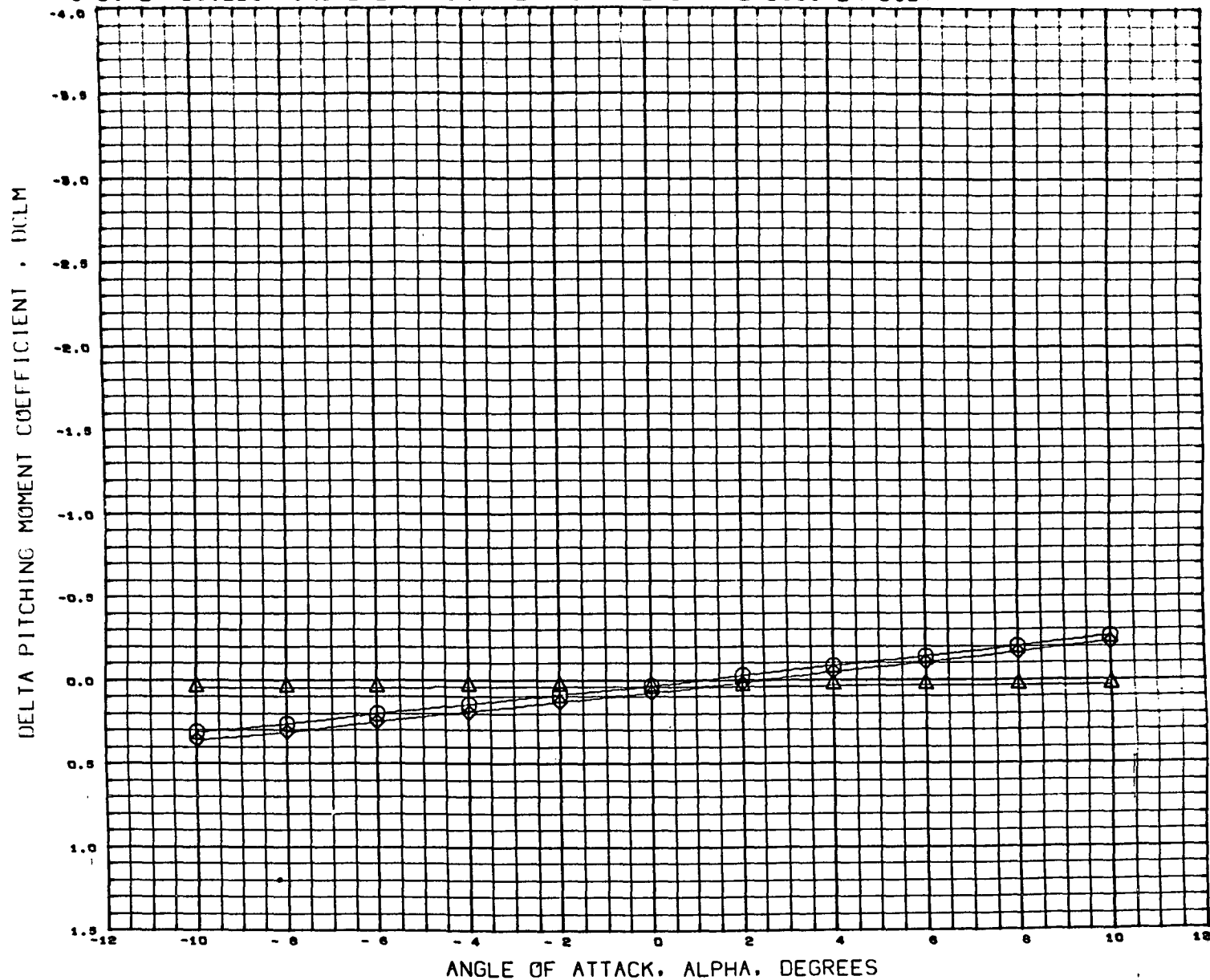
BOOSTER BUILDUP INCREMENTS IN THE PRESENCE OF A COMPLETE ORBITER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32211) | A3215A-A3214A (B20C4B+B5W17V17) - (B20+B5W17V17) | 0.000 | | 0.000 | 1.000 | SREF | 19.6560 SQ IN |
| (A32212) | 22A-15A (B20C4BW14V6+B5W17V17) - (B20C4B+B5W17V17) | 0.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

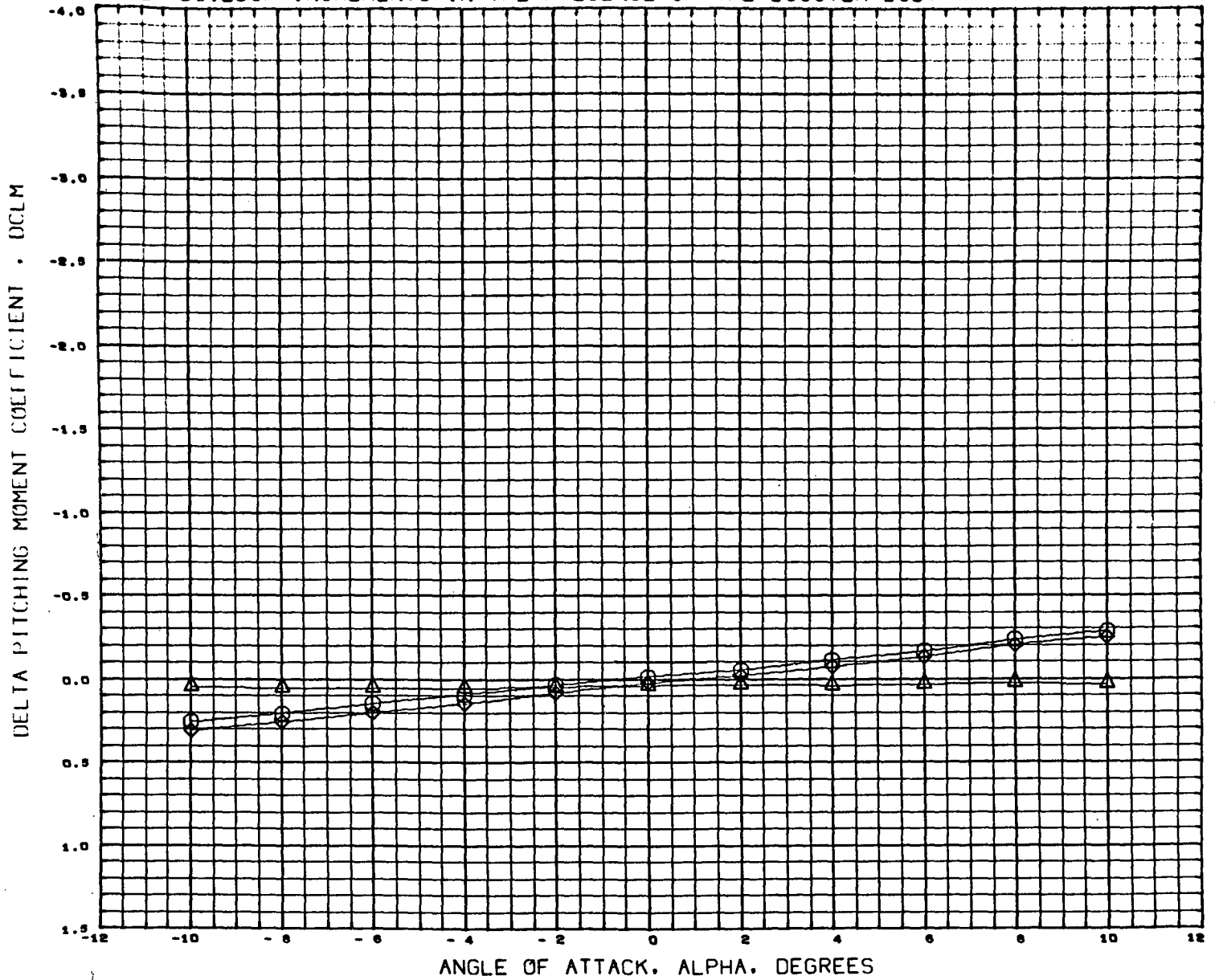
ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------|--------|
| (A32213) | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 | SQ IN |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 | INCHES |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 0.600

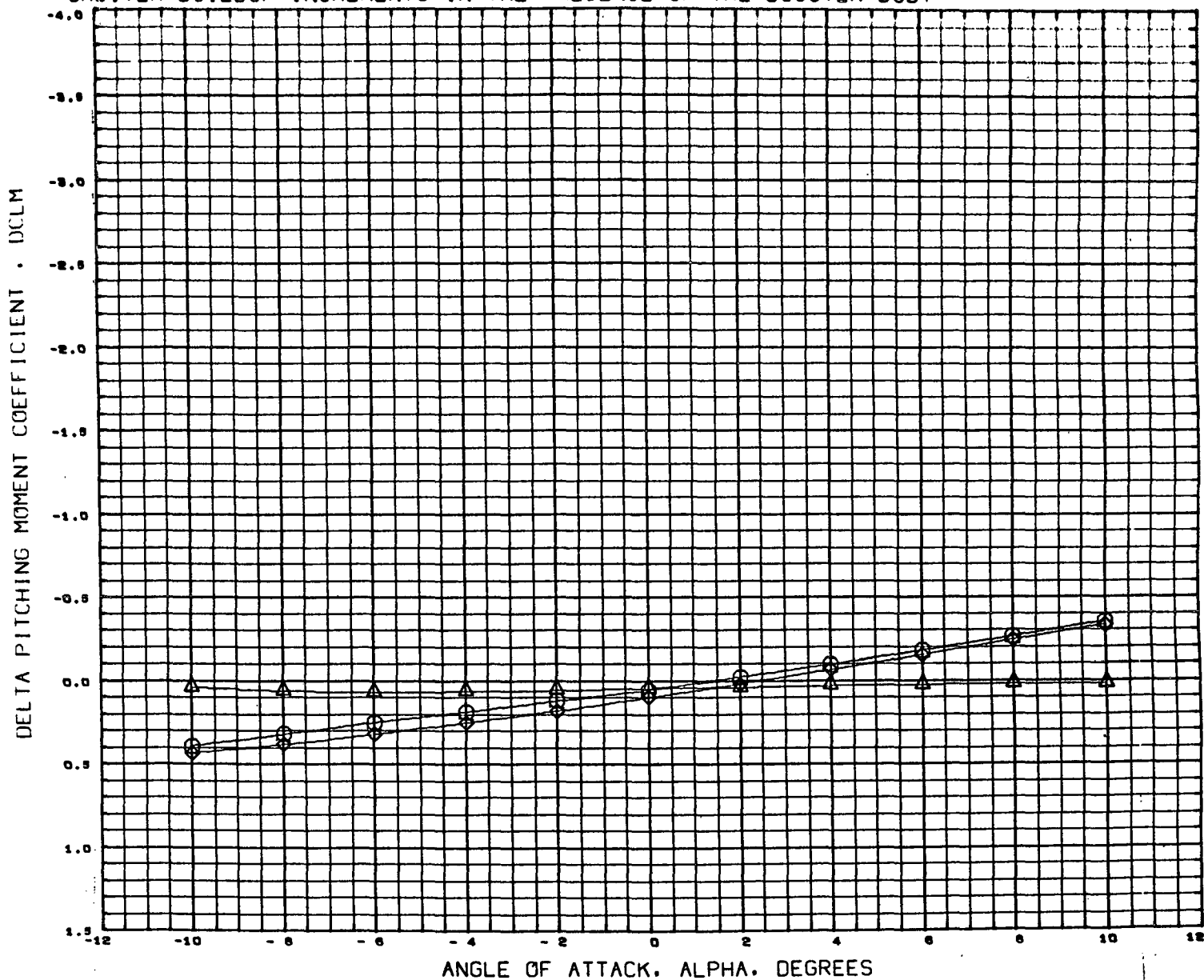
ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY



| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|----------|--------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32213) | ○ | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 SQ IN |
| (A32214) | △ | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32215) | ◇ | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 INCHES |
| | | | | | | | XMRP | 0.0000 |
| | | | | | | | YMRP | 0.0000 |
| | | | | | | | ZMRP | 0.0000 |
| | | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

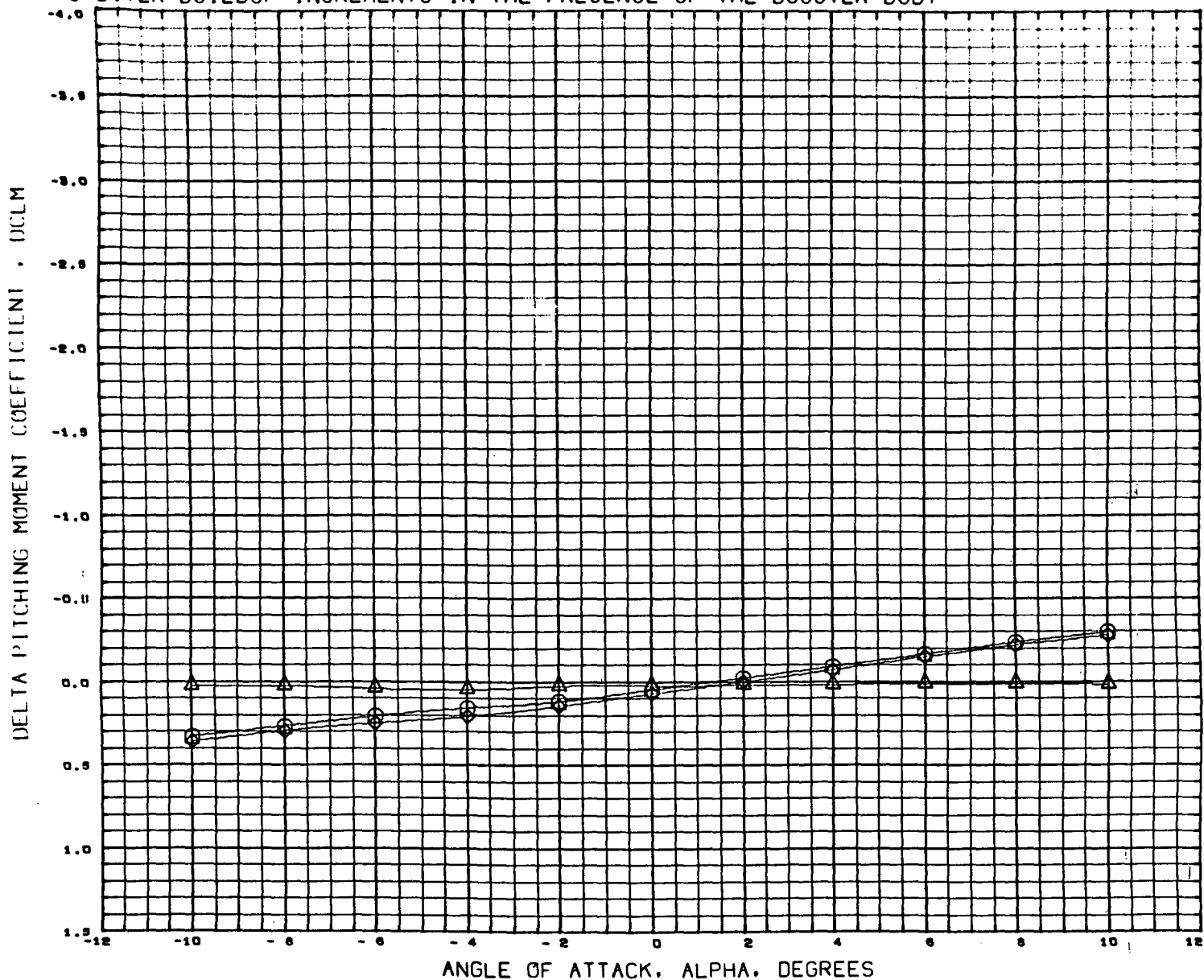
ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32213) | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 SQ IN |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.100

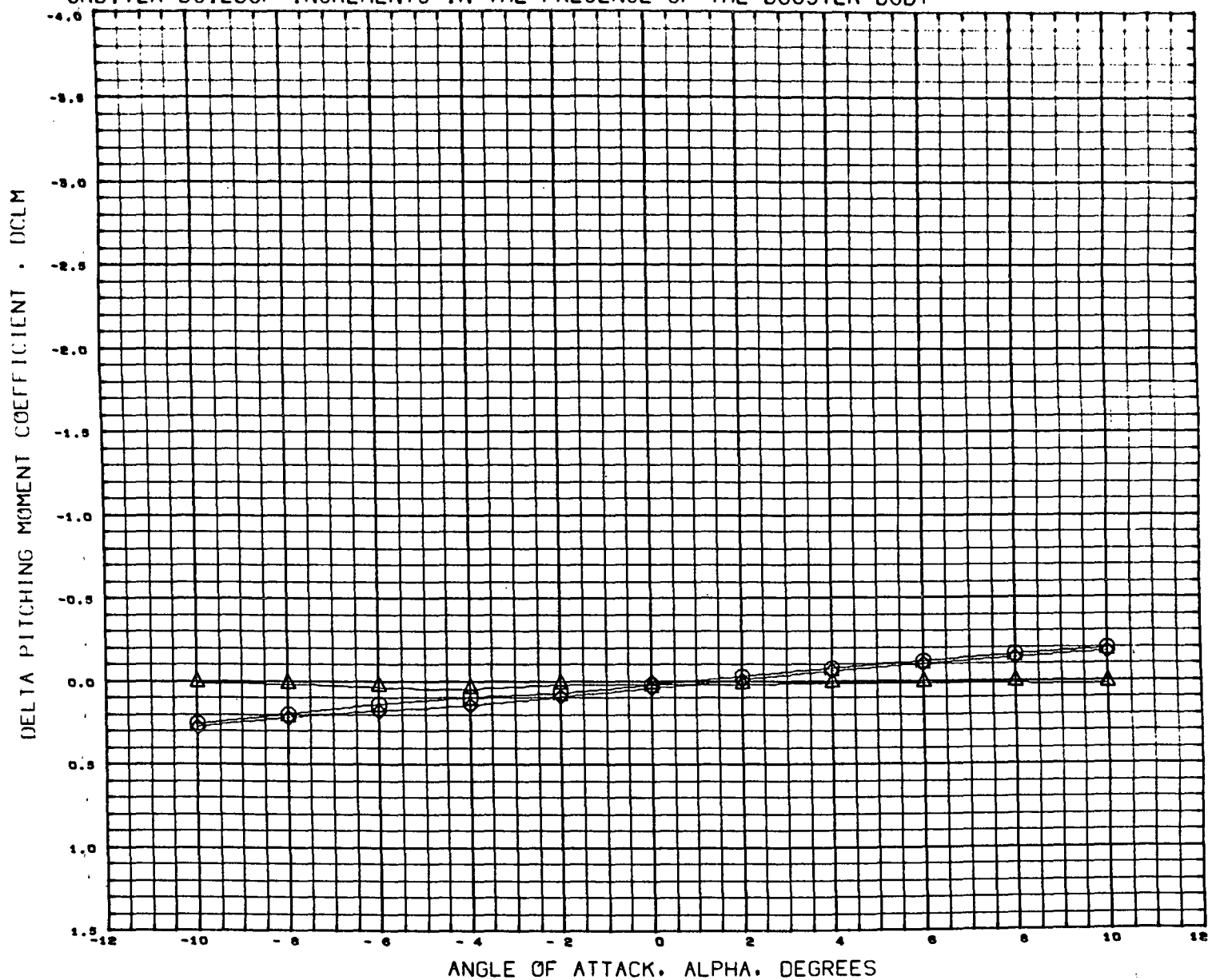
ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32213) | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 SQ IN |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.460

ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--|
| (A32213) | A3213A-A3208A (B20+B5W17) - (B20+B5) |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) |

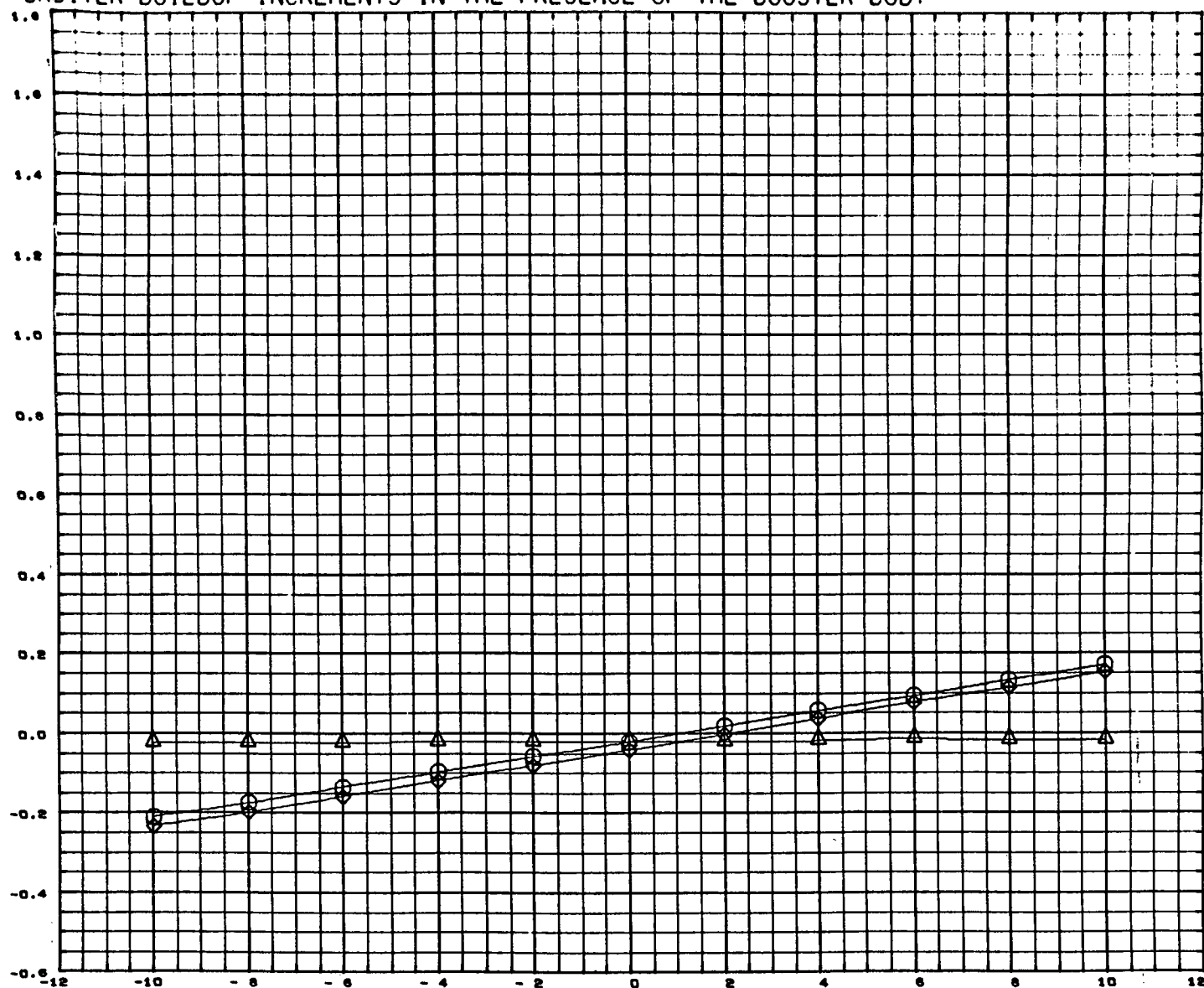
| BETA | POSITN | ORBINC | ELVORB |
|-------|--------|--------|--------|
| 0.000 | 1.000 | 0.000 | |
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 1.000 | 0.000 | |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.900

ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY

DELTA NORMAL FORCE COEFFICIENT, DCN

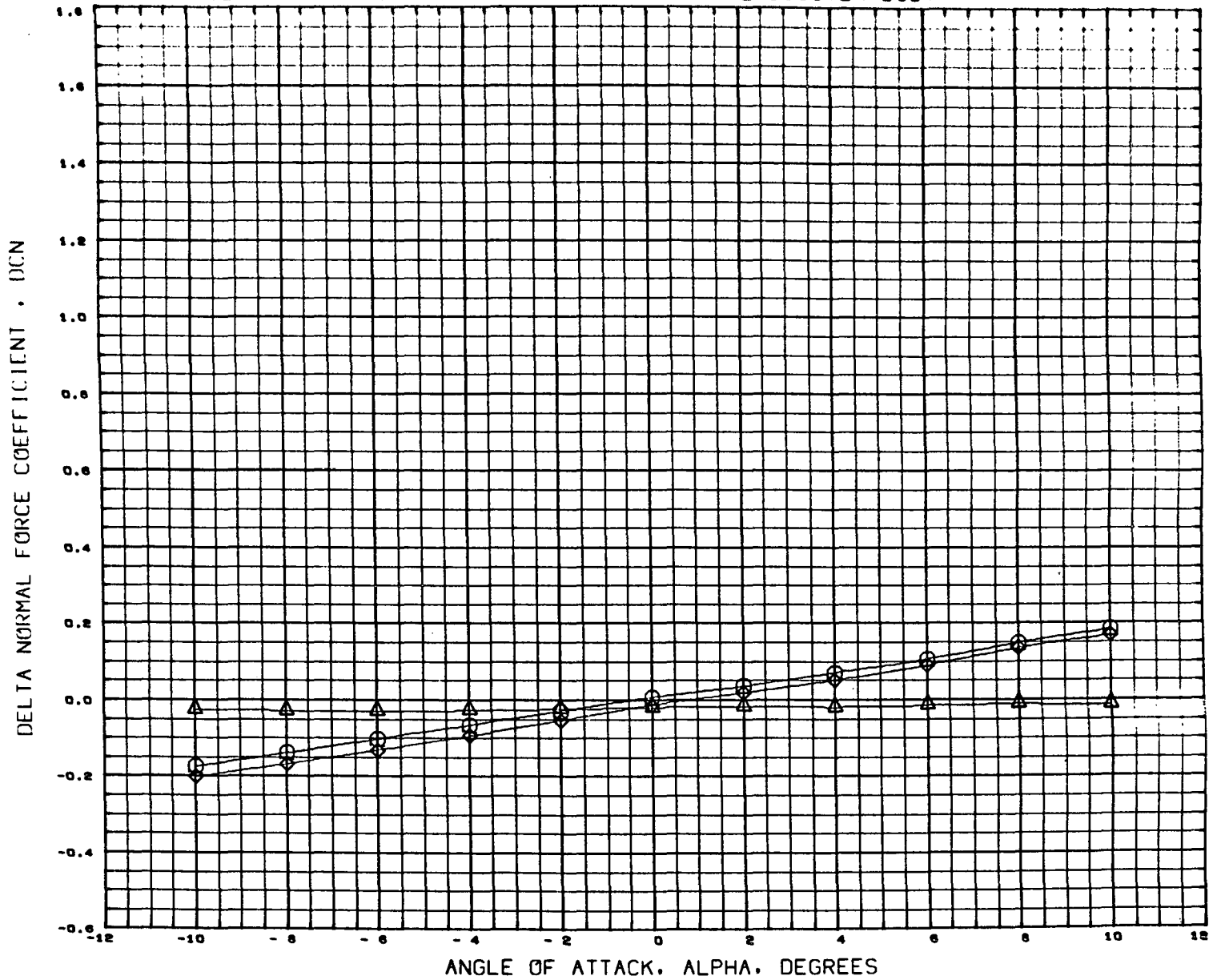


ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|----------|--------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32213) | ○ | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 SQ IN |
| (A32214) | △ | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32215) | ◇ | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 INCHES |
| | | | | | | | XMRP | 0.0000 |
| | | | | | | | YMRP | 0.0000 |
| | | | | | | | ZMRP | 0.0000 |
| | | | | | | | SCALE | 0.0033 SCALE |

MACH 0.600

ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY

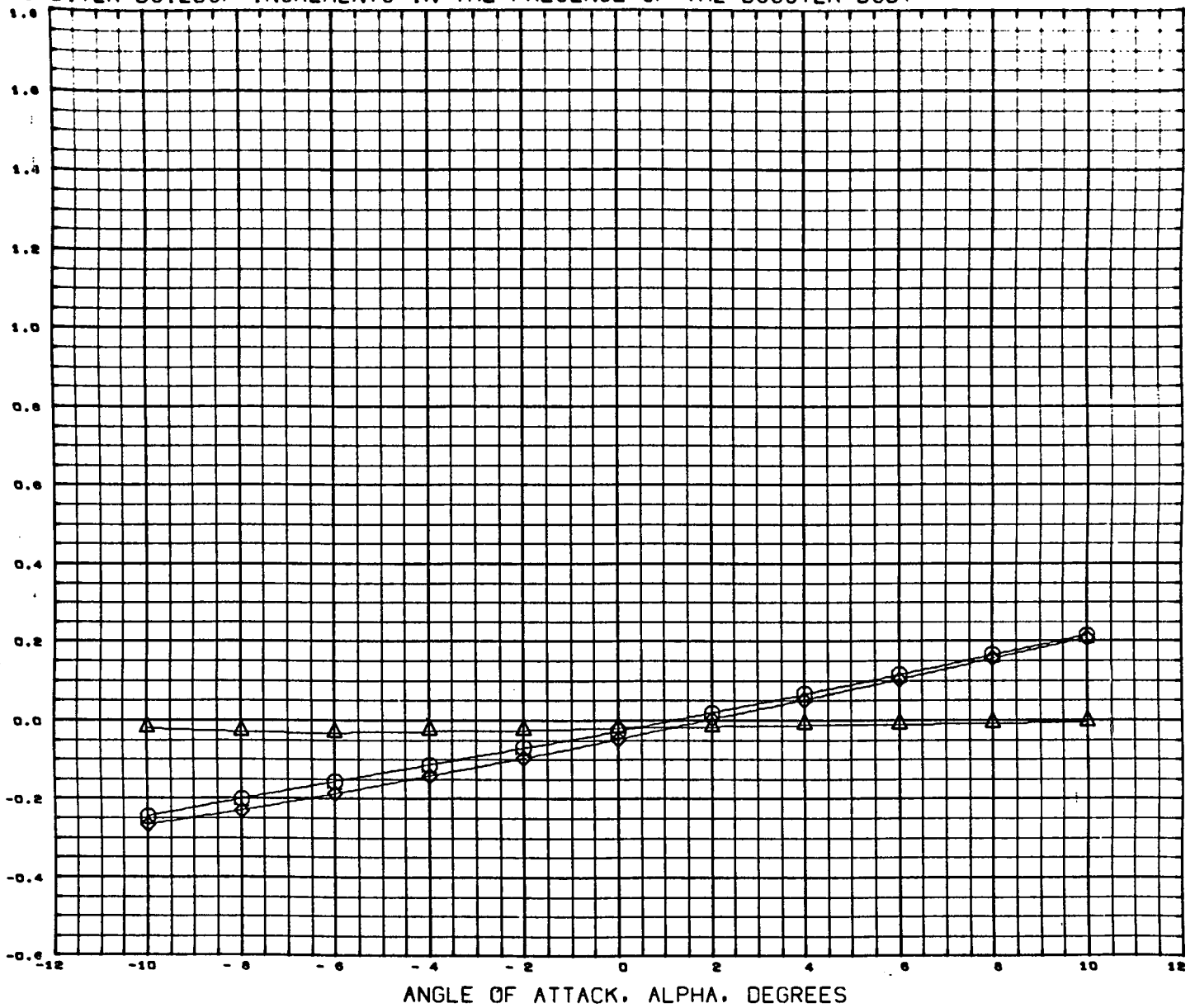


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32215) | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 SQ IN |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY

DELTA NORMAL FORCE COEFFICIENT, DCN

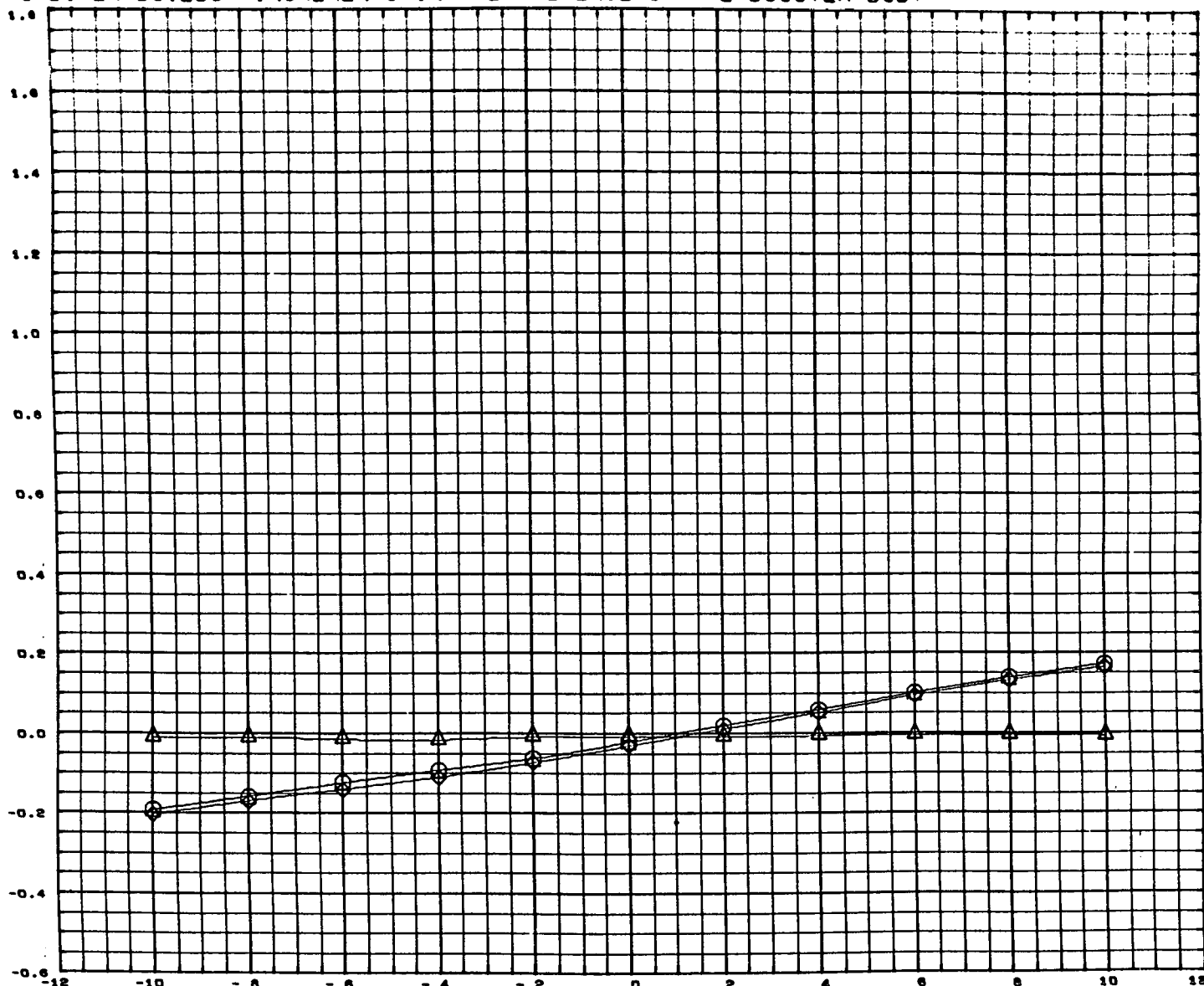


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32213) | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 SQ IN |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 INCHES |
| | | | | | | XMRF | 0.0000 |
| | | | | | | YMRF | 0.0000 |
| | | | | | | ZMRF | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.100

ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY

DELTA NORMAL FORCE COEFFICIENT - DCN



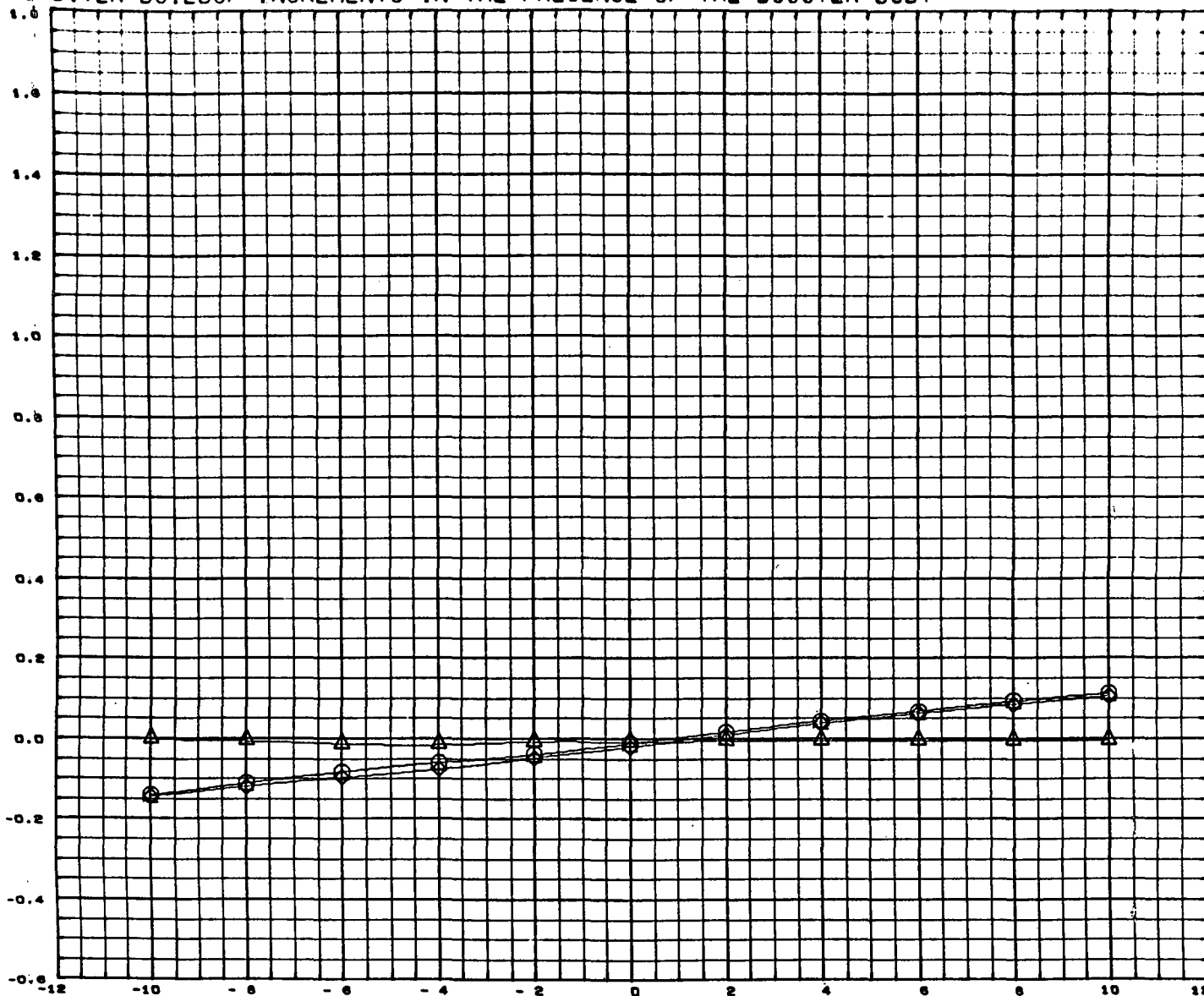
ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32213) | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 SQ IN |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0930 INCHES |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.460

ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY

DELTA NORMAL FORCE COEFFICIENT - DCN

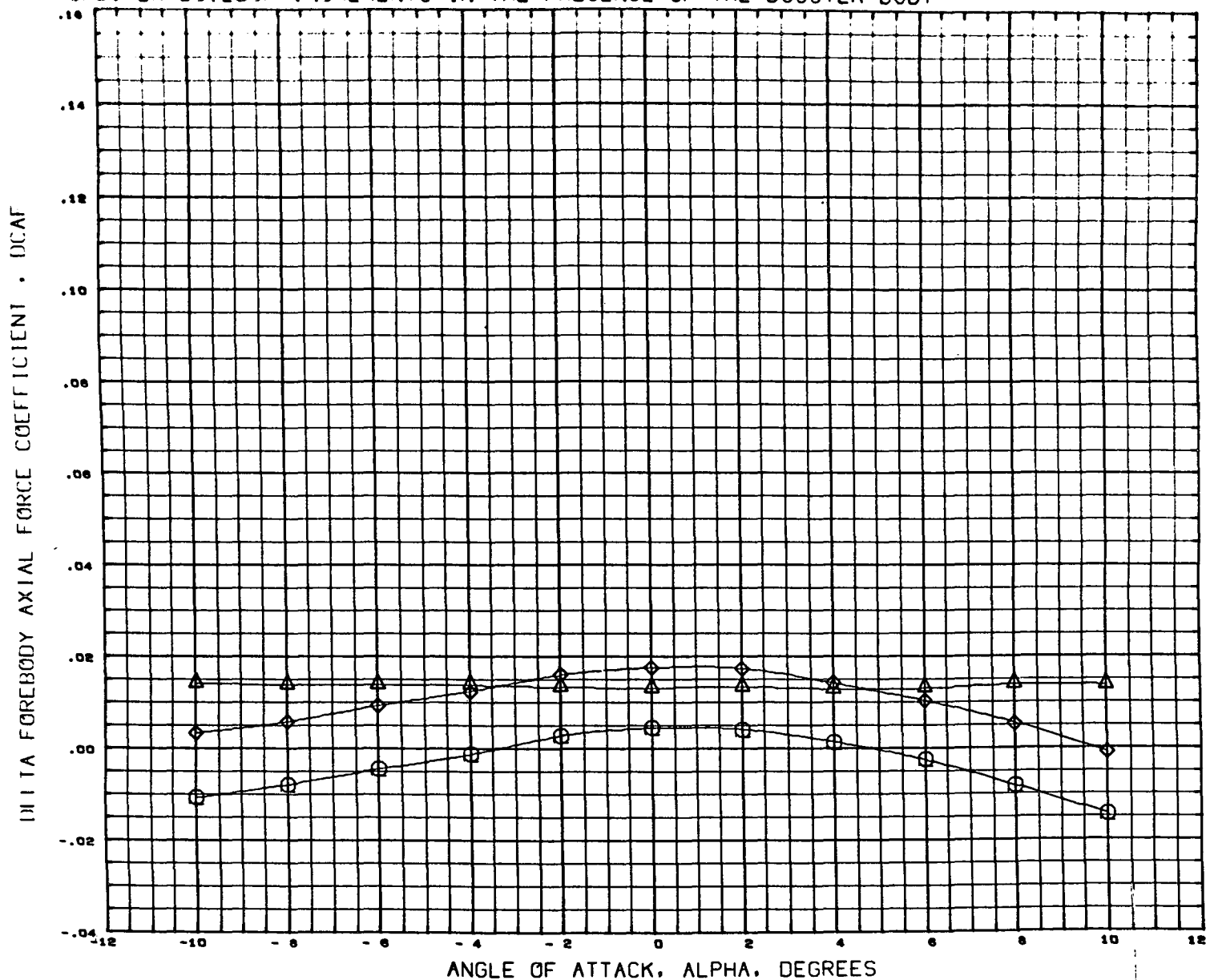


ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------|--------|
| (A32213) | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 | SQ IN |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 | INCHES |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 1.960

ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A32213) A3213A-A3208A (B20+B5W17) - (B20+B5)

(A32214) A3214A-A3213A (B20+B5W17V17) - (B20+B5W17)

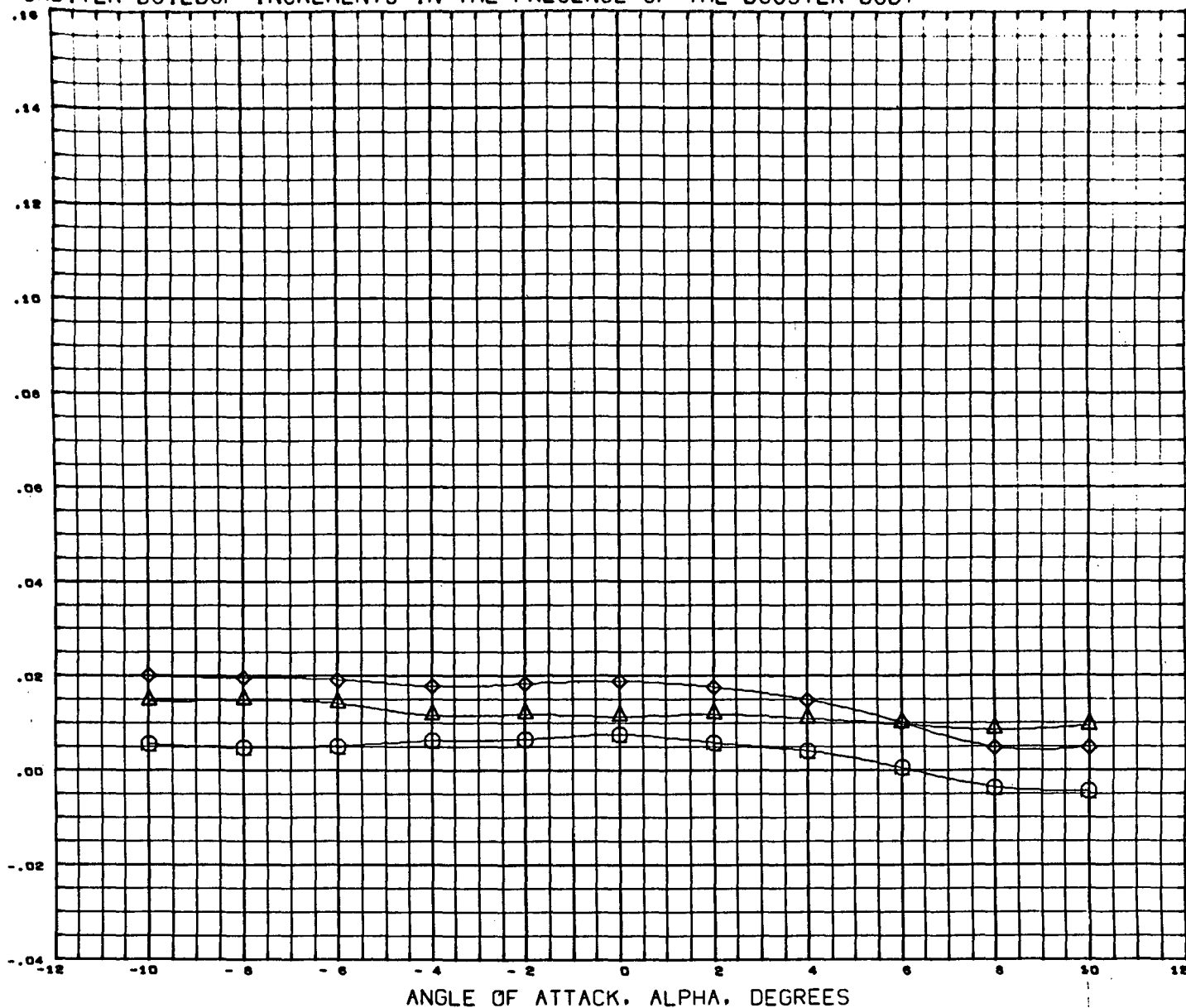
(A32215) A3214A-A3208A (B20+B5W17V17) - (B20+B5)

| BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | | |
|-------|--------|--------|--------|-----------------------|---------|--------|
| 0.000 | 1.000 | 0.000 | | SREF | 15.6560 | SQ IN |
| 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 | INCHES |
| 0.000 | 1.000 | 0.000 | | BREF | 6.0990 | INCHES |
| | | | | XMRP | 0.0000 | |
| | | | | YMRP | 0.0000 | |
| | | | | ZMRP | 0.0000 | |
| | | | | SCALE | 0.0035 | SCALE |

MACH 0.600

ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY

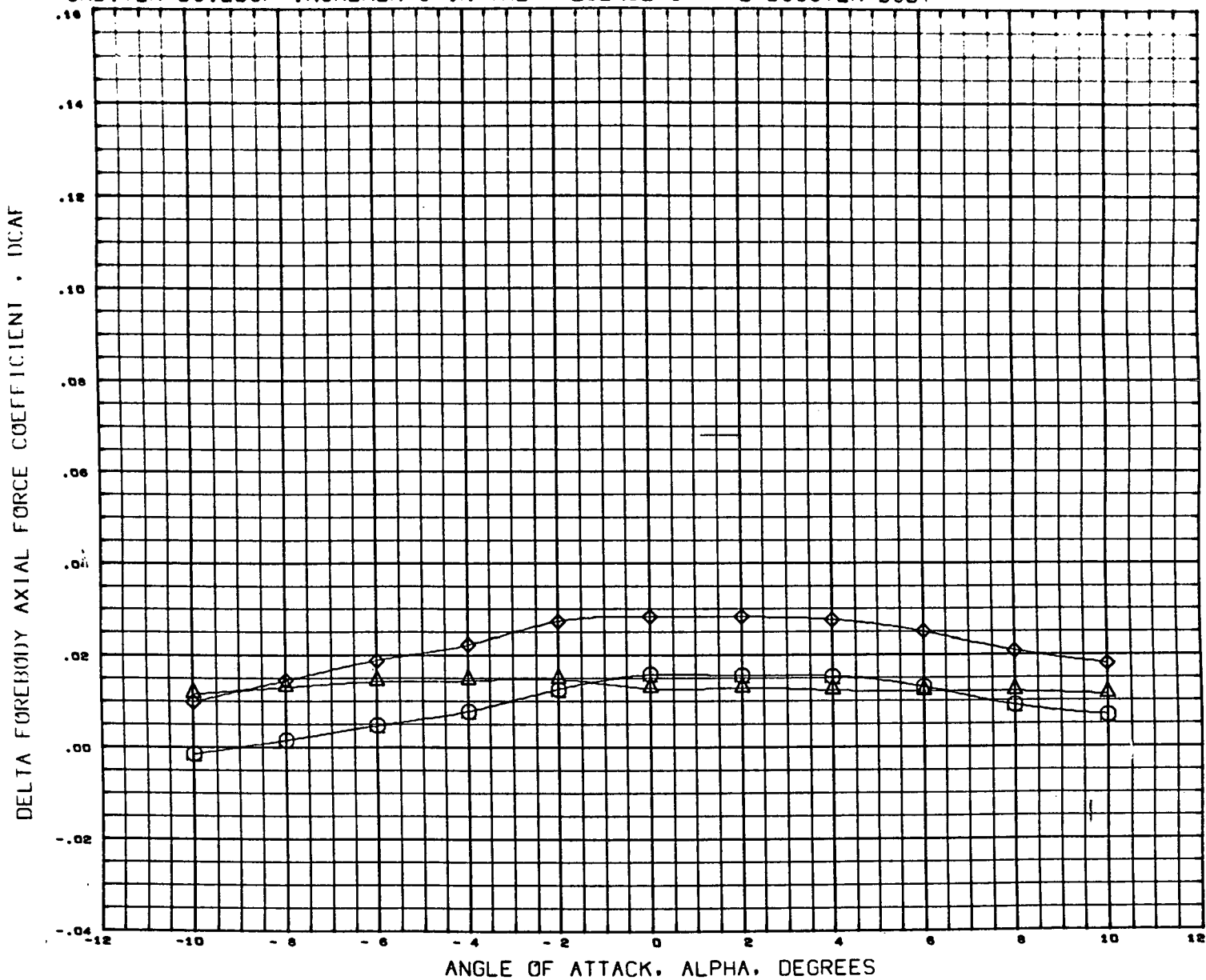
DELTA FOREBODY AXIAL FORCE COEFFICIENT - DCAF



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------|--------|
| (A32213) | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 13.6560 | SQ IN |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 | INCHES |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0039 | SCALE |

MACH 0.900

ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

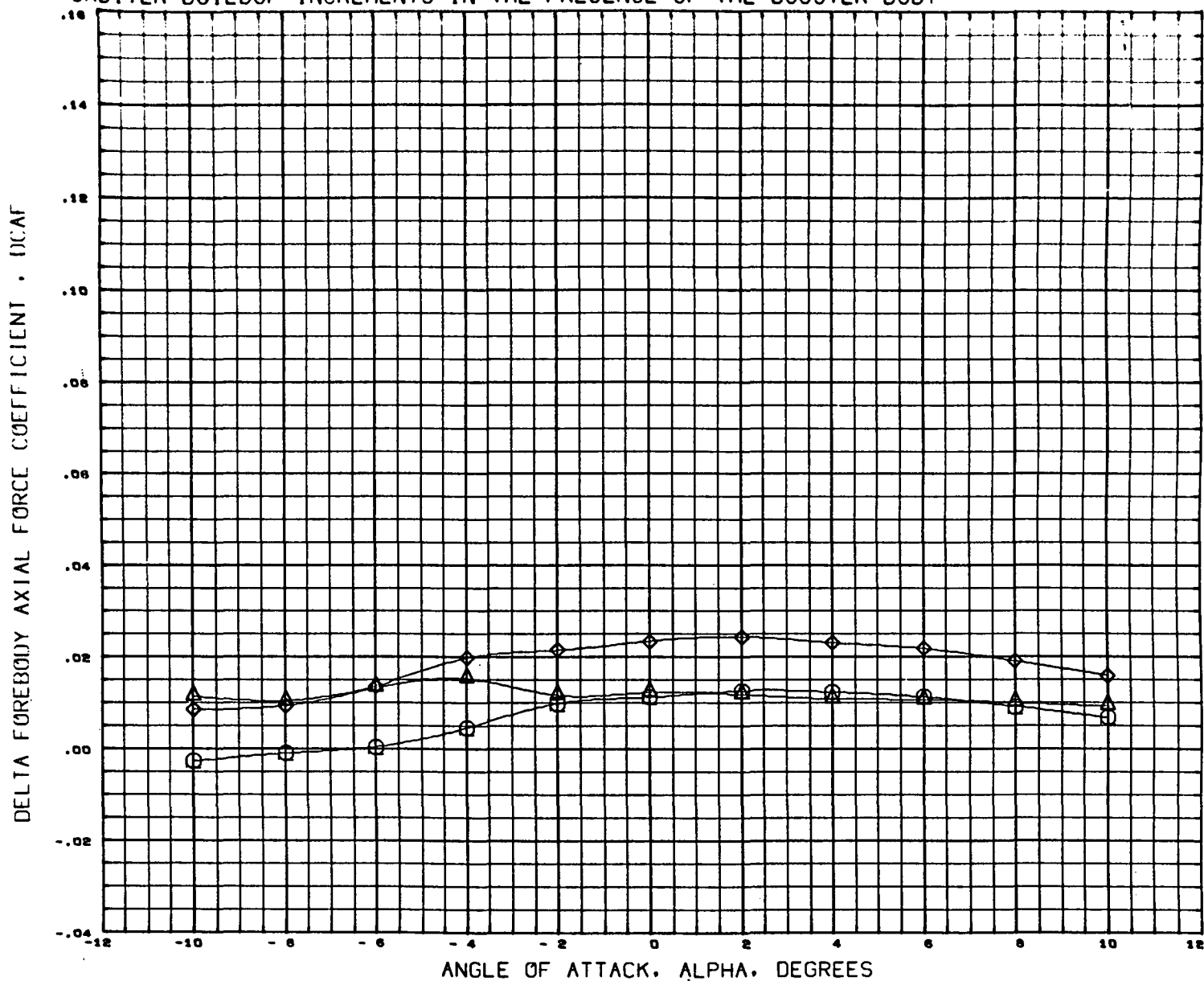
(A32213) A3213A-A3208A (B20+B5W17) - (B20+B5)
 (A32214) A3214A-A3213A (B20+B5W17V17) - (B20+B5W17)
 (A32215) A3214A-A3208A (B20+B5W17V17) - (B20+B5)

BETA POSITN ORBINC ELVORB
 0.000 1.000 0.000 0.000
 0.000 1.000 0.000 0.000
 0.000 1.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.100

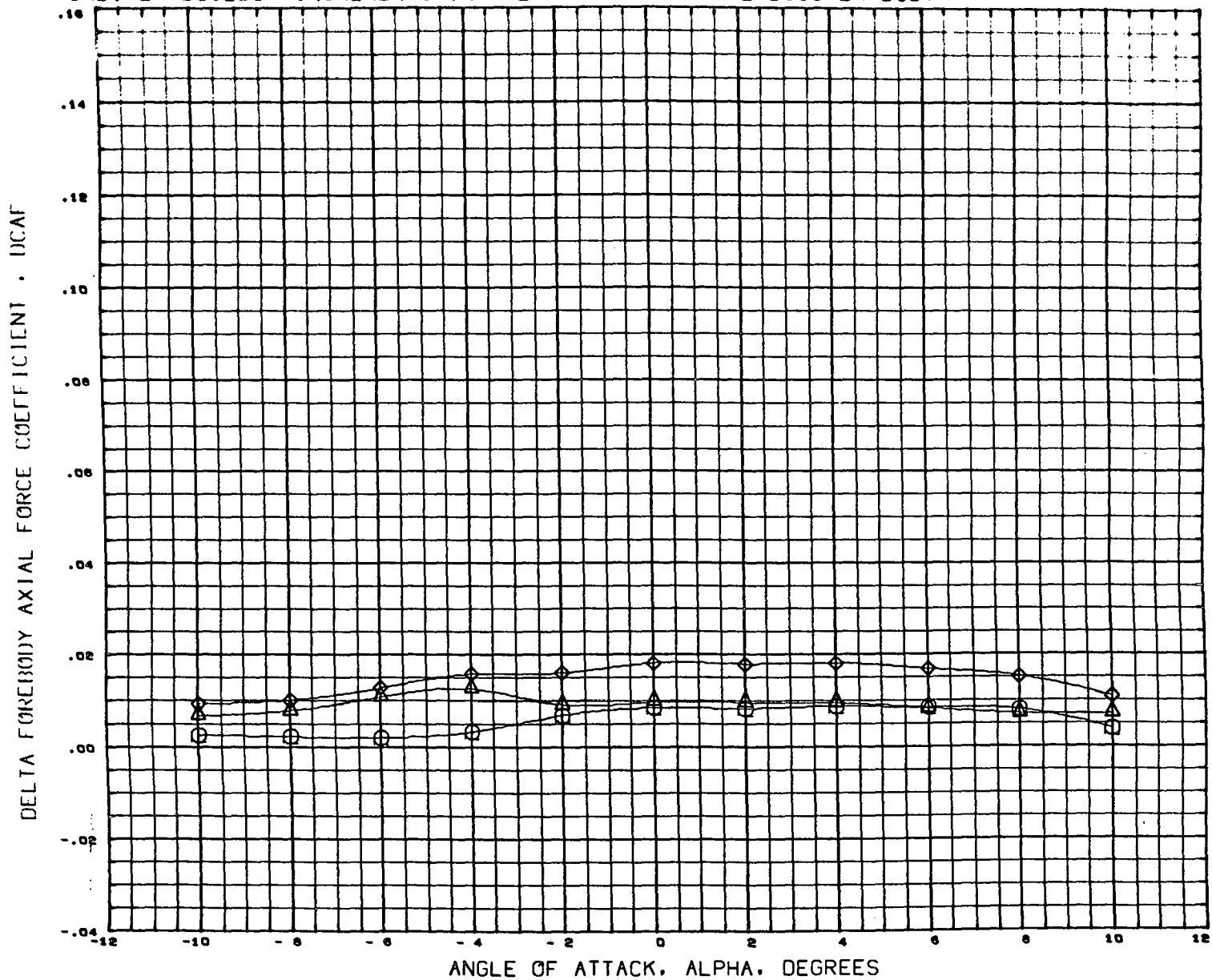
ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------------|
| (A32213) | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 SQ IN |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0039 SCALE |

MACH 1.460

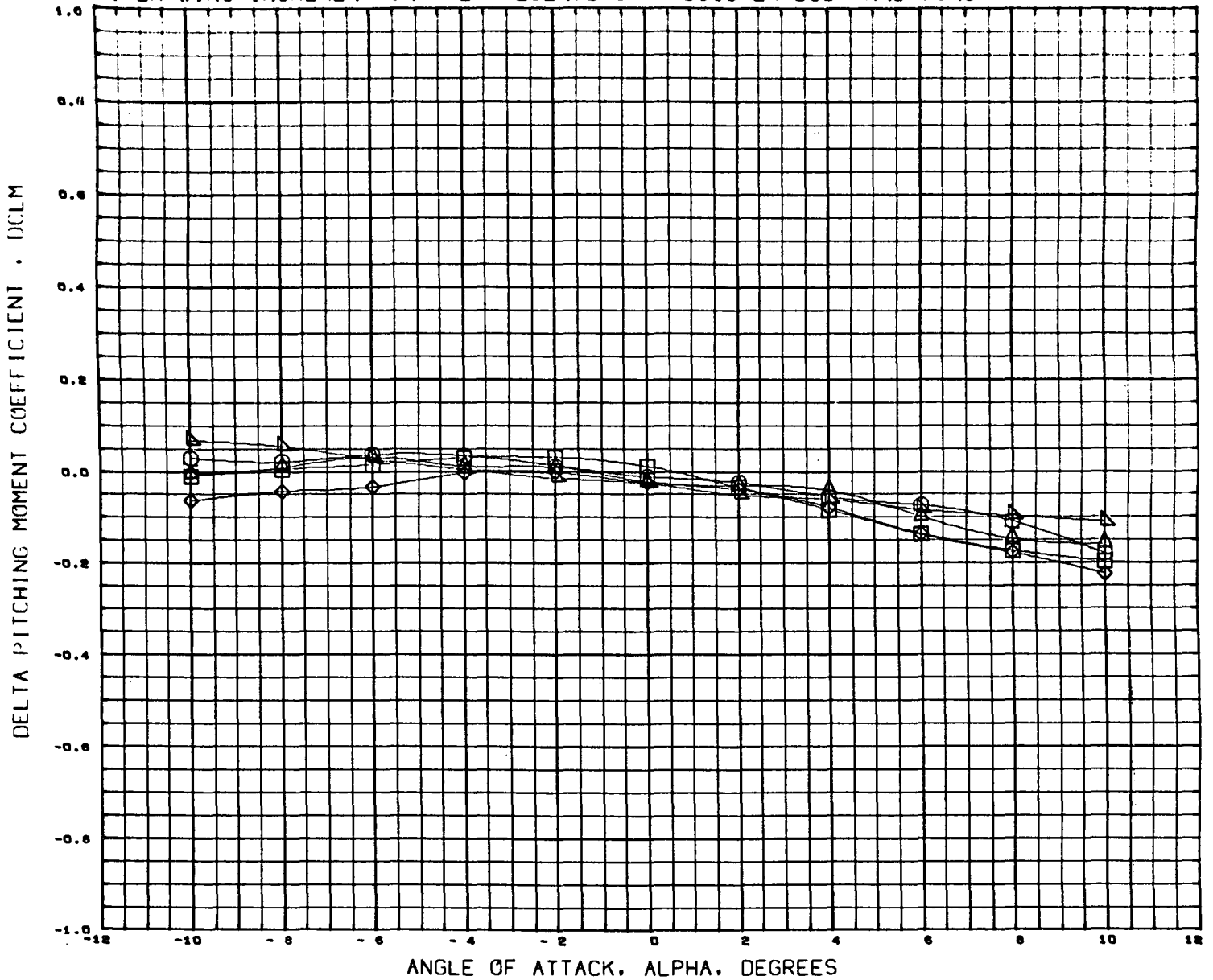
ORBITER BUILDUP INCREMENTS IN THE PRESENCE OF THE BOOSTER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | POSITN | ORBINC | ELVORB | REFERENCE INFORMATION | | |
|-----------------|--|-------|--------|--------|--------|-----------------------|---------|--------|
| (A32213) | A3213A-A3208A (B20+B5W17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | SREF | 15.6560 | SQ IN |
| (A32214) | A3214A-A3213A (B20+B5W17V17) - (B20+B5W17) | 0.000 | 1.000 | 0.000 | 0.000 | LREF | 3.0950 | INCHES |
| (A32215) | A3214A-A3208A (B20+B5W17V17) - (B20+B5) | 0.000 | 1.000 | 0.000 | | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 1.960

ORBITER WING INCREMENT IN THE PRESENCE OF A BOOSTER BODY AND WING



| SYMBOL | MACH | PARAMETRIC VALUES | | | |
|--------|-------|-------------------|-------|--------|-------|
| ○ | 0.600 | BETA | 0.000 | POSITN | 1.000 |
| △ | 0.900 | ORBINC | 0.000 | ELVATR | 0.000 |
| ◇ | 1.100 | AILRON | 0.000 | | |
| □ | 1.480 | | | | |
| ◻ | 1.960 | | | | |

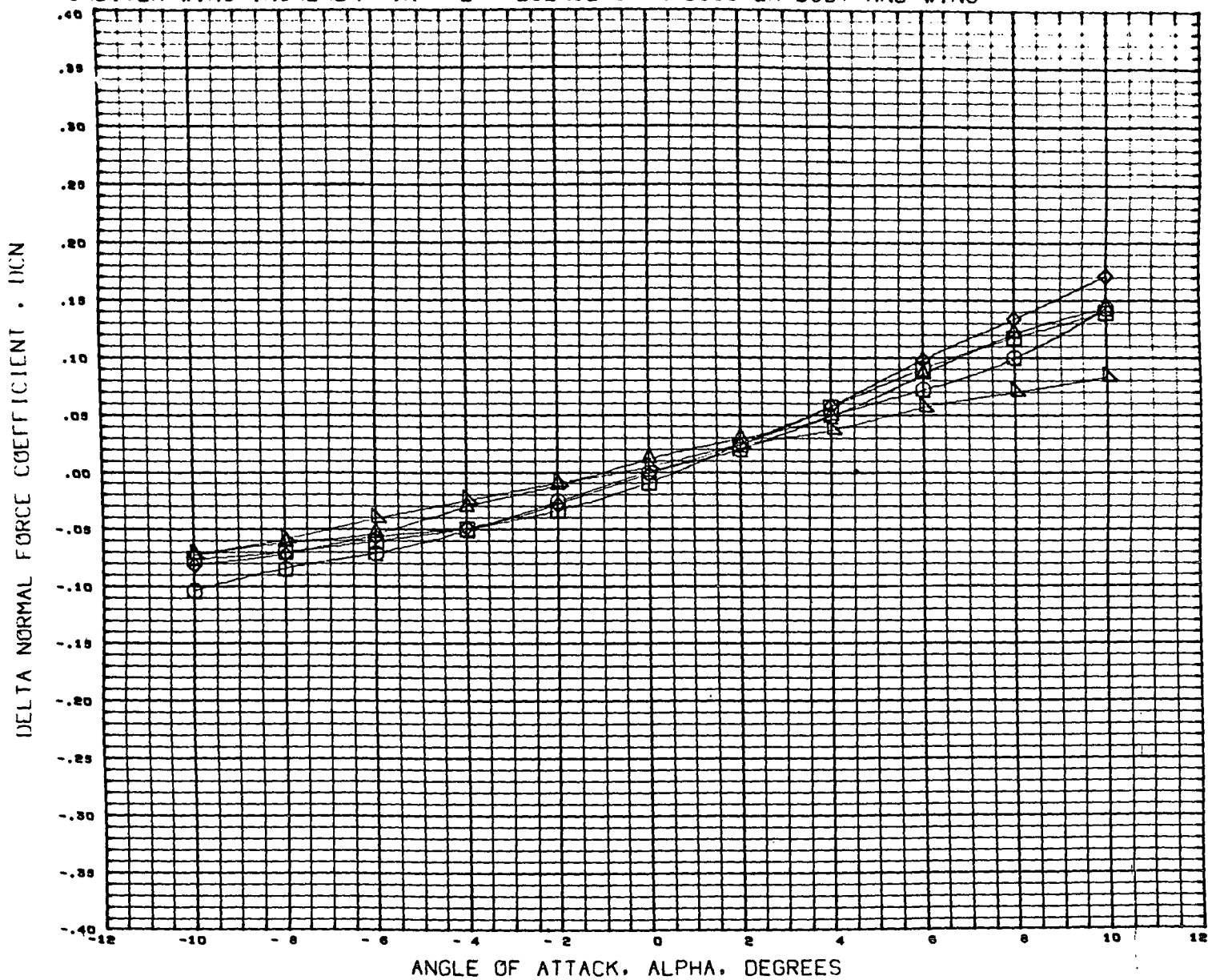
DATA HIST. CODE MVI=C

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

A3210A-A3209A (B20W14+B5W17)-(B20W14+B5)

(A32216) 31 JUL 72 PAGE 341

ORBITER WING INCREMENT IN THE PRESENCE OF A BOOSTER BODY AND WING



| SYMBOL | MACH | PARAMETRIC VALUES | | | |
|--------|-------|-------------------|-------|--------|-------|
| ○ | 0.600 | BETA | 0.000 | POSITN | 1.000 |
| △ | 0.900 | ORBINC | 0.000 | ELVATR | 0.000 |
| ◇ | 1.100 | ATLRON | 0.000 | | |
| □ | 1.460 | | | | |
| ▤ | 1.960 | | | | |

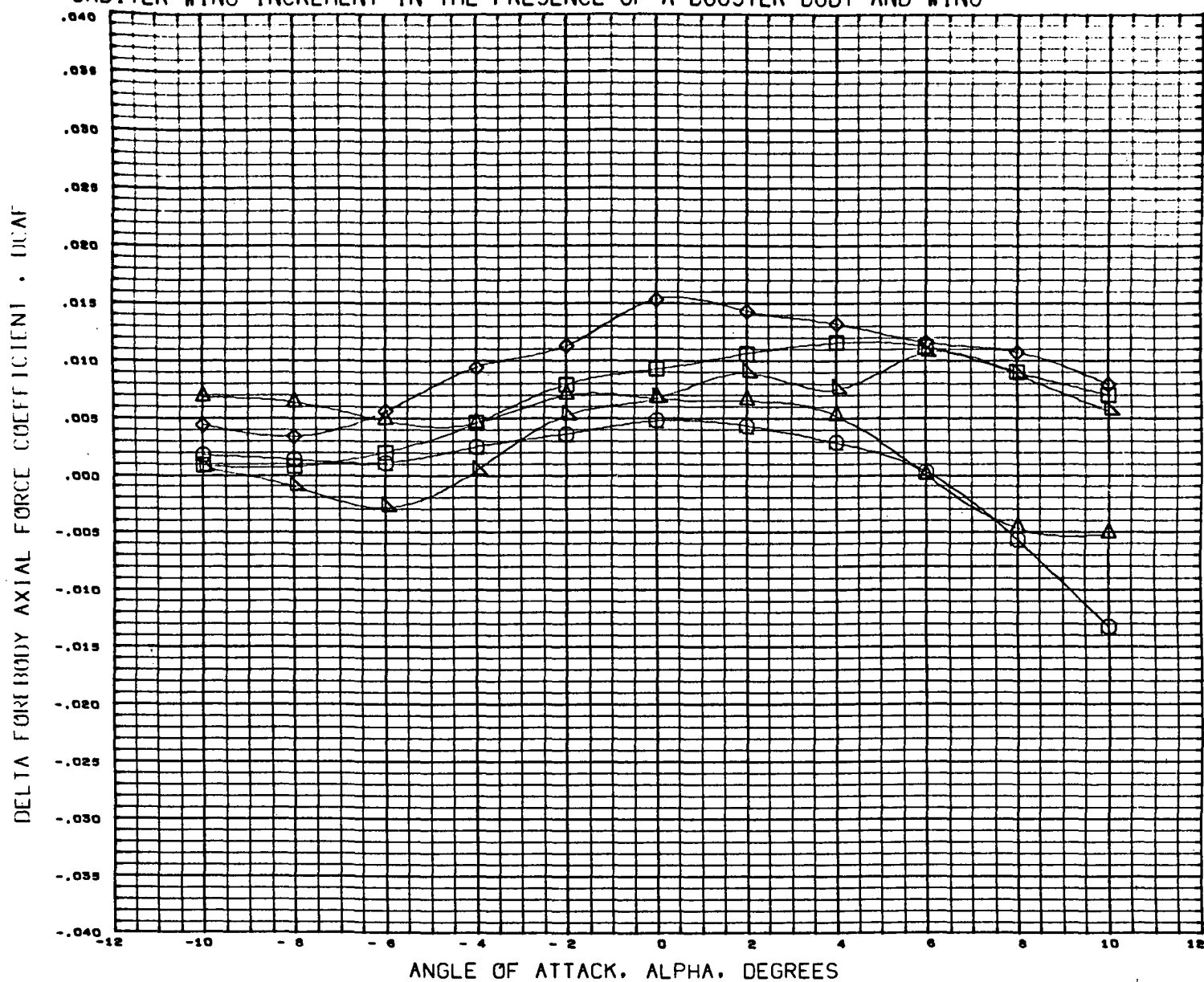
DATA HIST. CODE MVI=C

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 19.6960 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

A3210A-A3209A (B20W14+B5W17)-(B20W14+B5)

(A32216) 31 JUL 72 PAGE 342

ORBITER WING INCREMENT IN THE PRESENCE OF A BOOSTER BODY AND WING

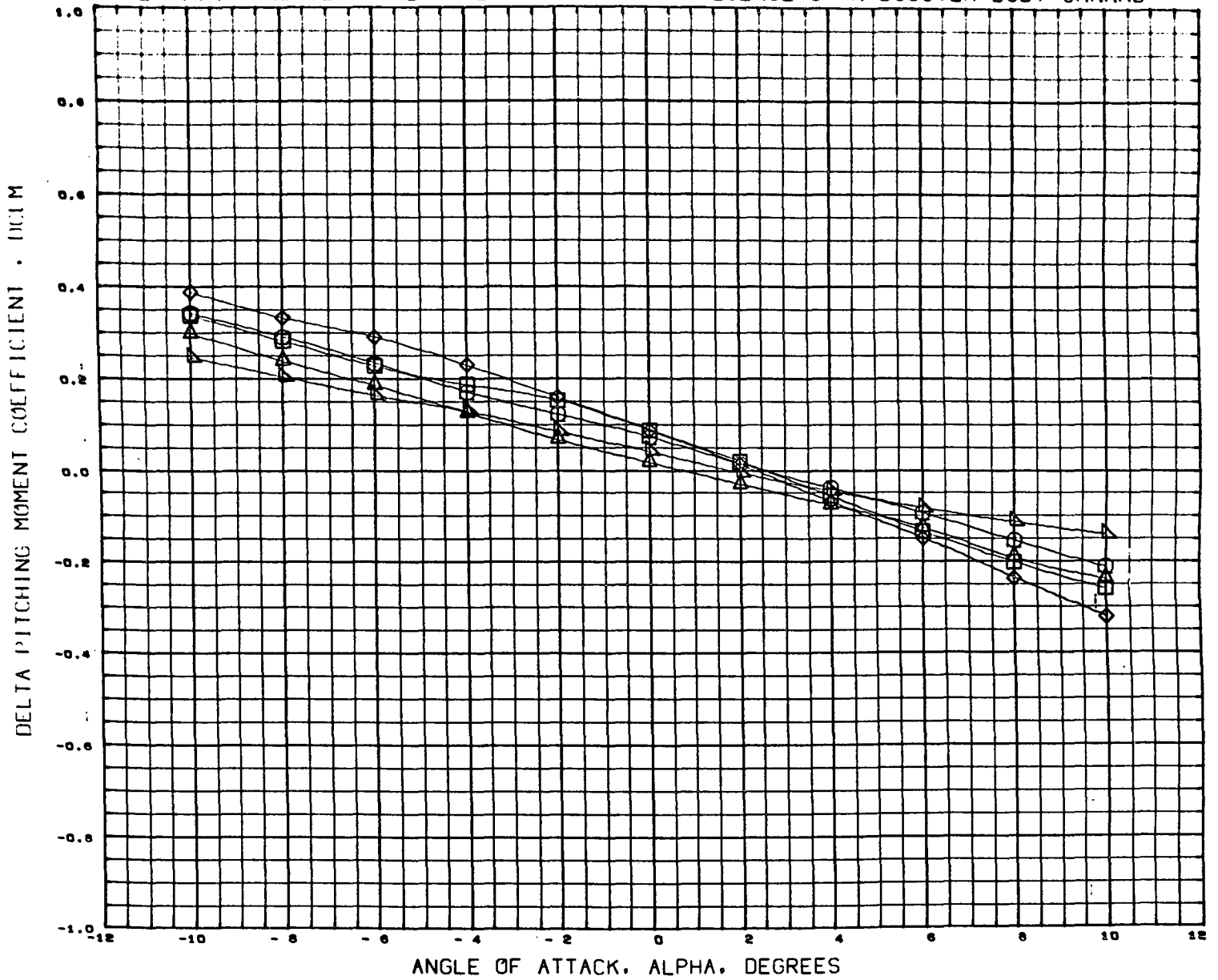


| SYMBOL | MACH | PARAMETRIC VALUES | | | |
|--------|-------|-------------------|-------|--------|-------|
| ○ | 0.600 | BETA | 0.000 | POSITN | 1.000 |
| △ | 0.900 | ORBINC | 0.000 | ELVATR | 0.000 |
| ◇ | 1.100 | AILRON | 0.000 | | |
| □ | 1.460 | | | | |
| ▽ | 1.960 | | | | |

DATA HIST. CODE MVI+C

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ORBITER WING AND VERTICAL TAIL INCREMENT IN PRESENCE OF A BOOSTER BODY-CANARD



| SYMBOL | PARAMETRIC VALUES | | | | REFERENCE INFORMATION | | |
|--------|-------------------|-------|--------|--------|-----------------------|--------|--------|
| | MACH | BETA | POSITN | CANARD | SREF | LRFP | SCALE |
| ◇ | 0.800 | 0.000 | 1.000 | 0.000 | 19.6360 | 3.0950 | 50 IN |
| □ | 0.900 | 0.000 | 1.000 | 0.000 | 6.0990 | 0.0000 | INCHES |
| △ | 1.100 | 0.000 | 1.000 | 0.000 | 0.0000 | 0.0000 | INCHES |
| ○ | 1.400 | 0.000 | 1.000 | 0.000 | 0.0000 | 0.0000 | INCHES |
| × | 1.900 | 0.000 | 1.000 | 0.000 | 0.0000 | 0.0000 | INCHES |

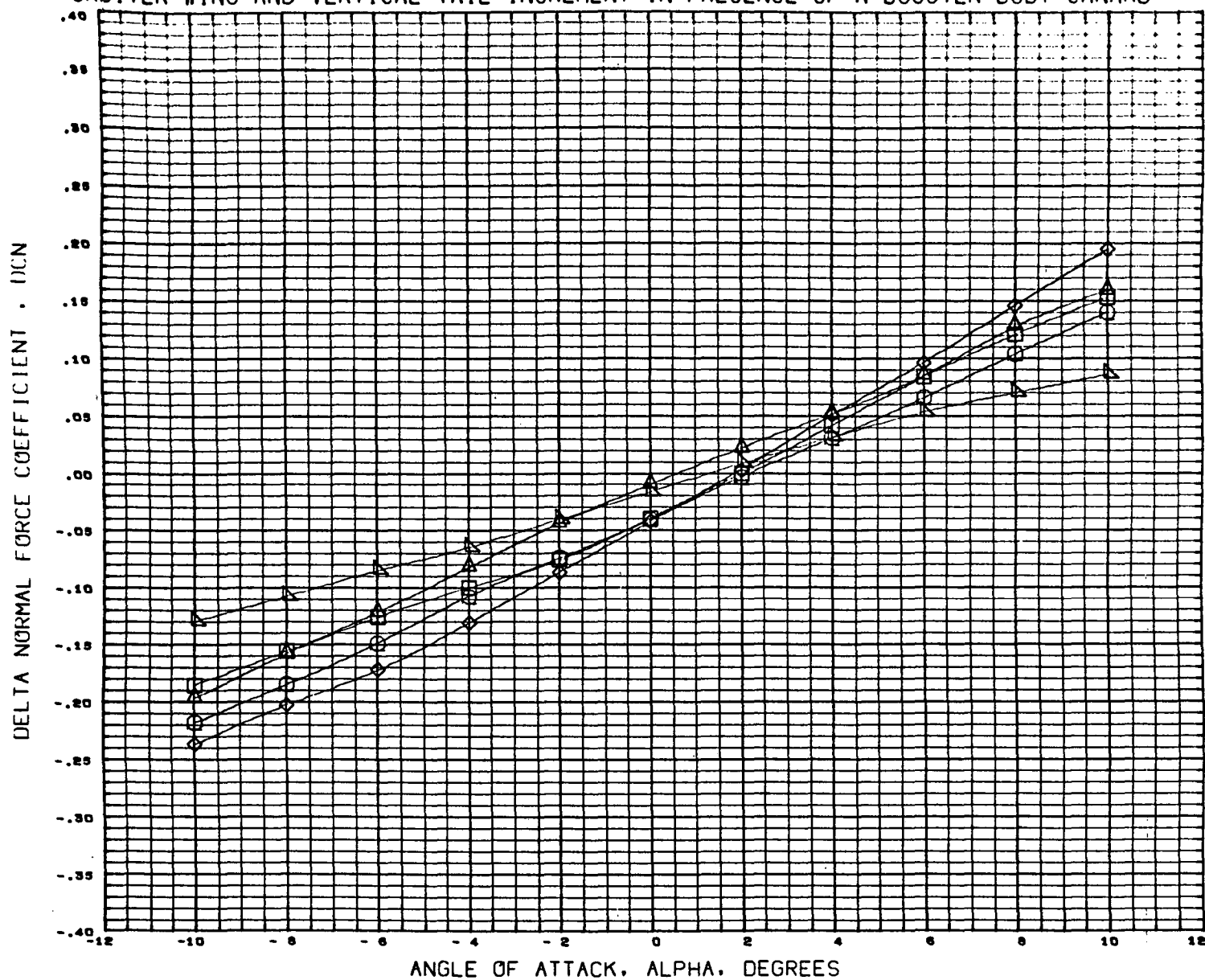
DATA HIST. CODE MVI=C

A3215A-A3212A (B20C4B+B5W17V17)-(B20C4B+B5)

(A32217) 31 JUL 72

PAGE 344

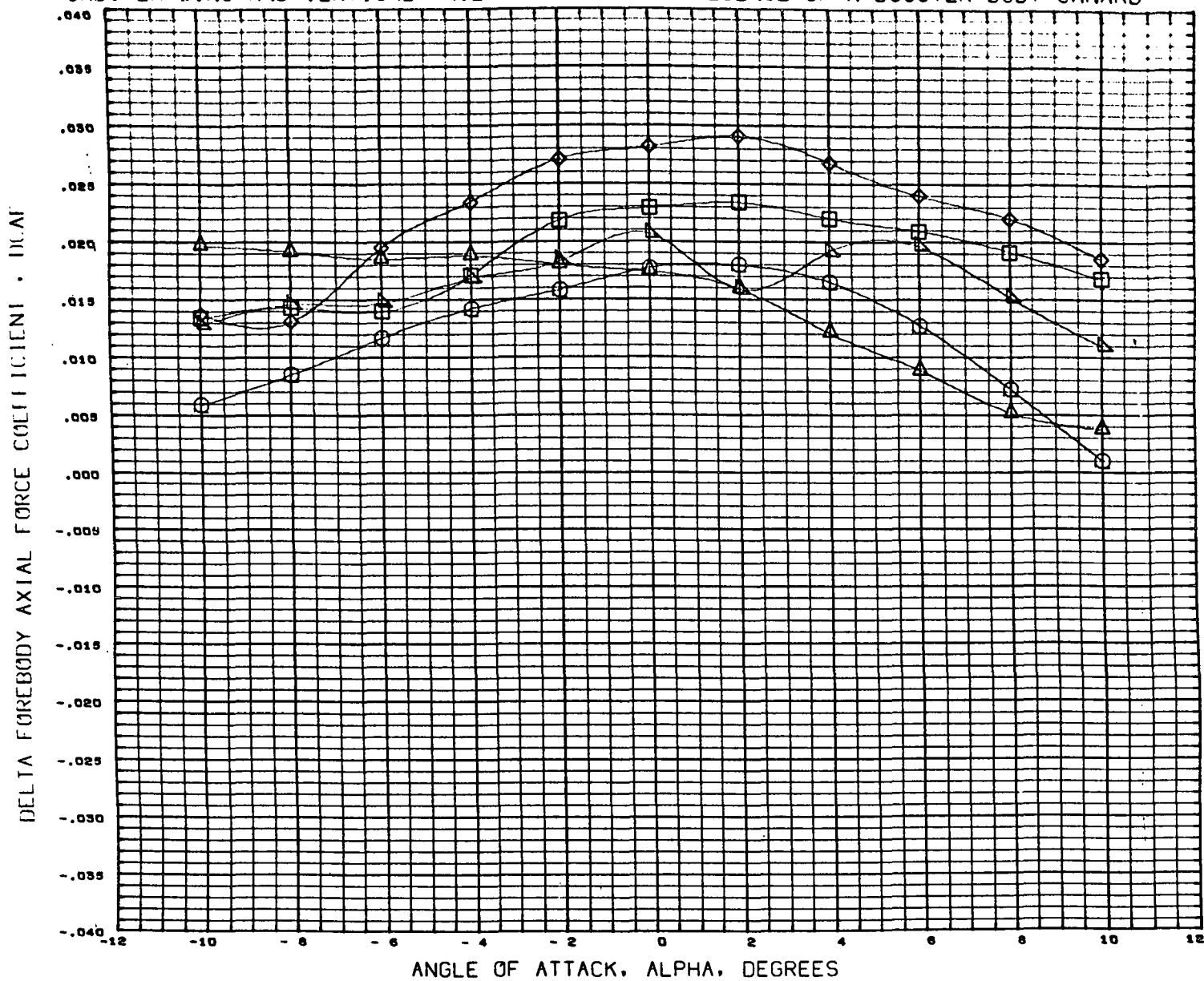
ORBITER WING AND VERTICAL TAIL INCREMENT IN PRESENCE OF A BOOSTER BODY-CANARD



| SYMBOL | PARAMETRIC VALUES | | | | REFERENCE INFORMATION | | |
|--------|-------------------|-------|-------|--------|-----------------------|--------|--------|
| | MACH | BETA | ORBIT | POSITN | SREF | SQ IN | INCHES |
| ◇ | 0.600 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 | INCHES |
| □ | 0.900 | 0.000 | 0.000 | 0.000 | BREF | 6.0990 | INCHES |
| △ | 1.100 | | | | XMRP | 0.0000 | |
| ○ | 1.460 | | | | YMRP | 0.0000 | |
| × | 1.960 | | | | ZMRP | 0.0000 | |
| | | | | | SCALE | 0.0035 | SCALE |

DATA HIST. CODE MVI+C

ORBITER WING AND VERTICAL TAIL INCREMENT IN PRESENCE OF A BOOSTER BODY-CANARD



SYMBOL MACH

0.800 BETA 0.000 POSITN 1.000

0.900 ORBINC 0.000 CANARD 0.000

1.100

1.400

1.900

DATA HIST. CODE MVI+C

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0980 INCHES

BREF 6.0990 INCHES

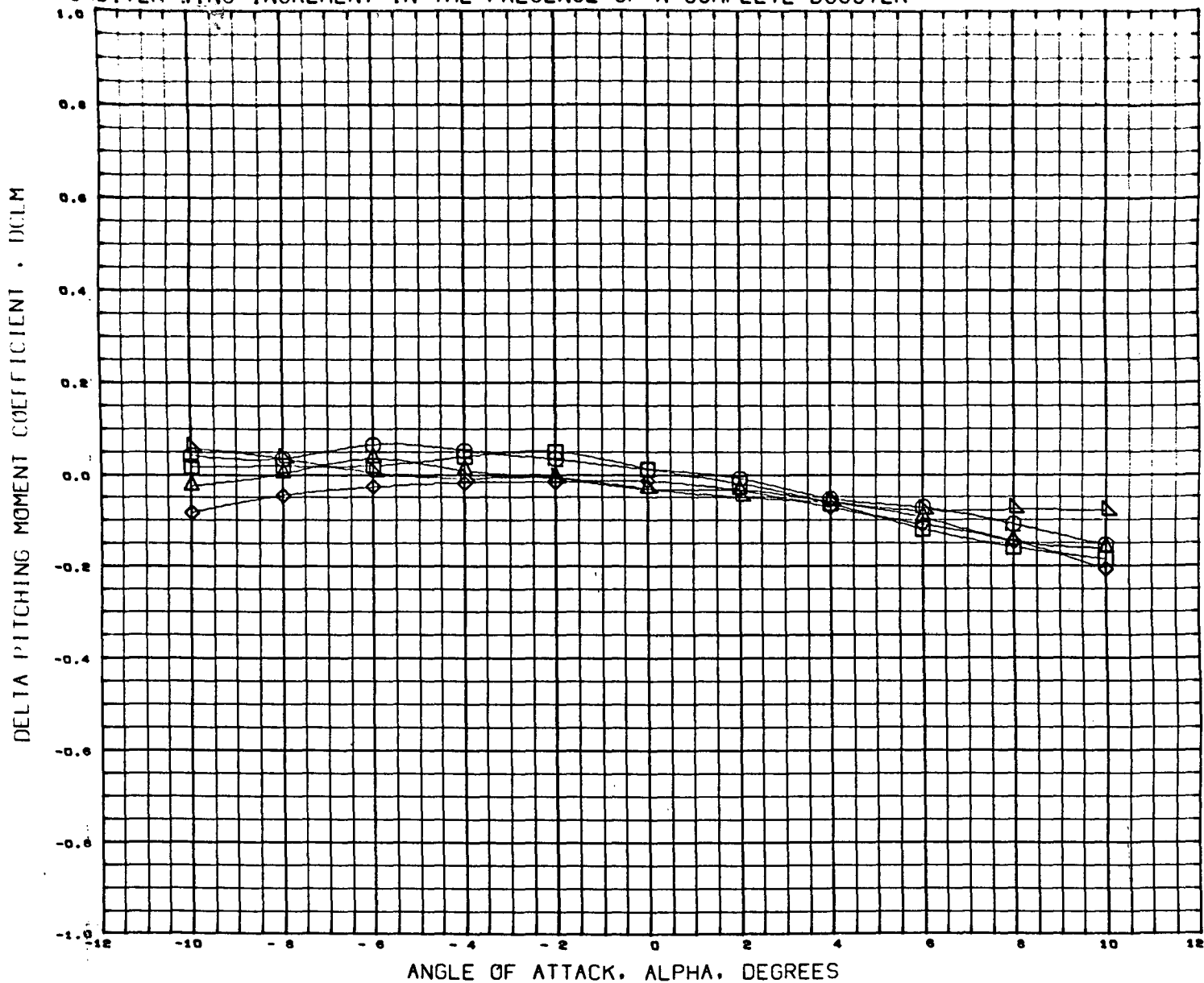
XMRP 0.0000

YMRP 0.0000

ZMRP 0.0000

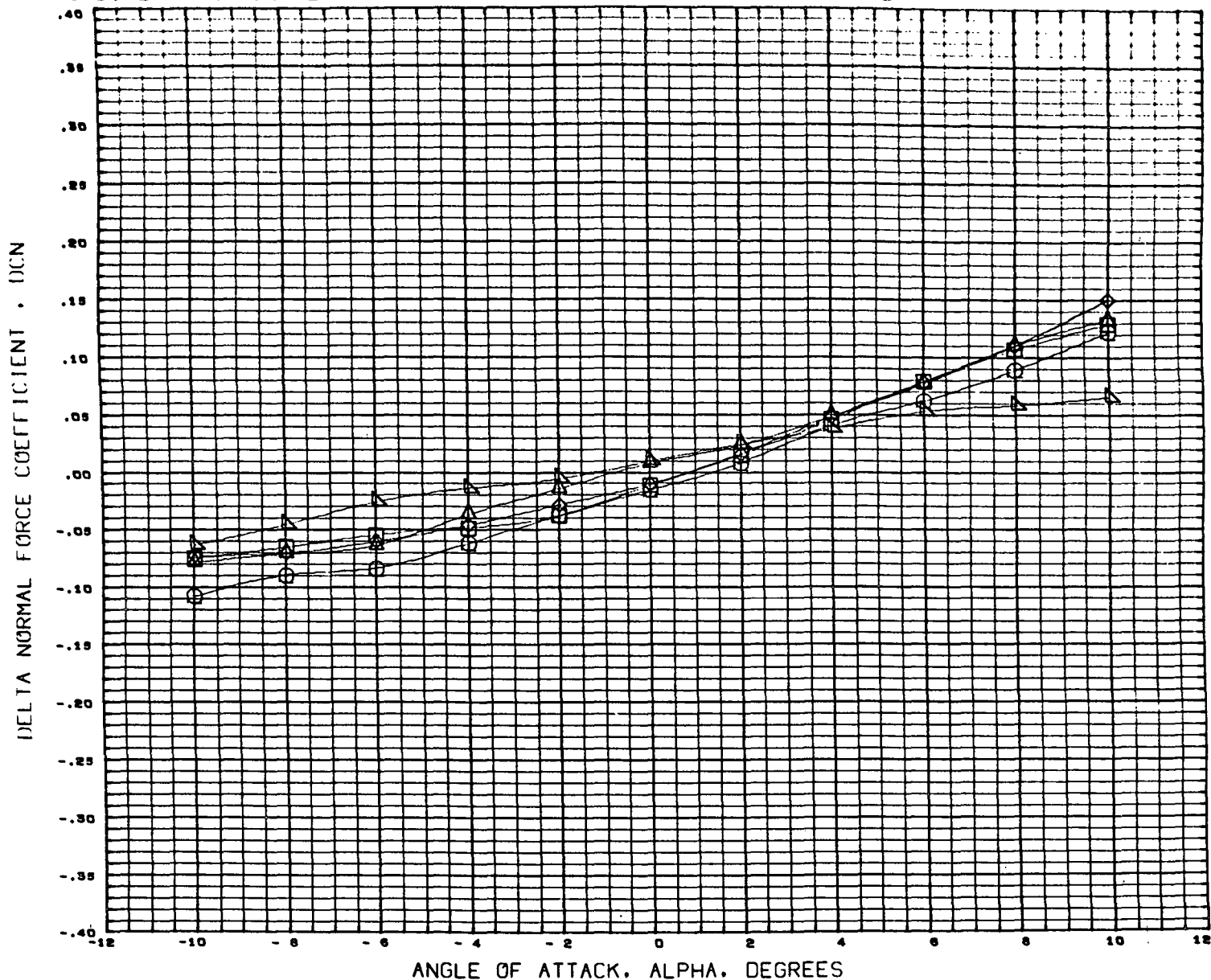
SCALE 0.0035 SCALE

ORBITER WING INCREMENT IN THE PRESENCE OF A COMPLETE BOOSTER



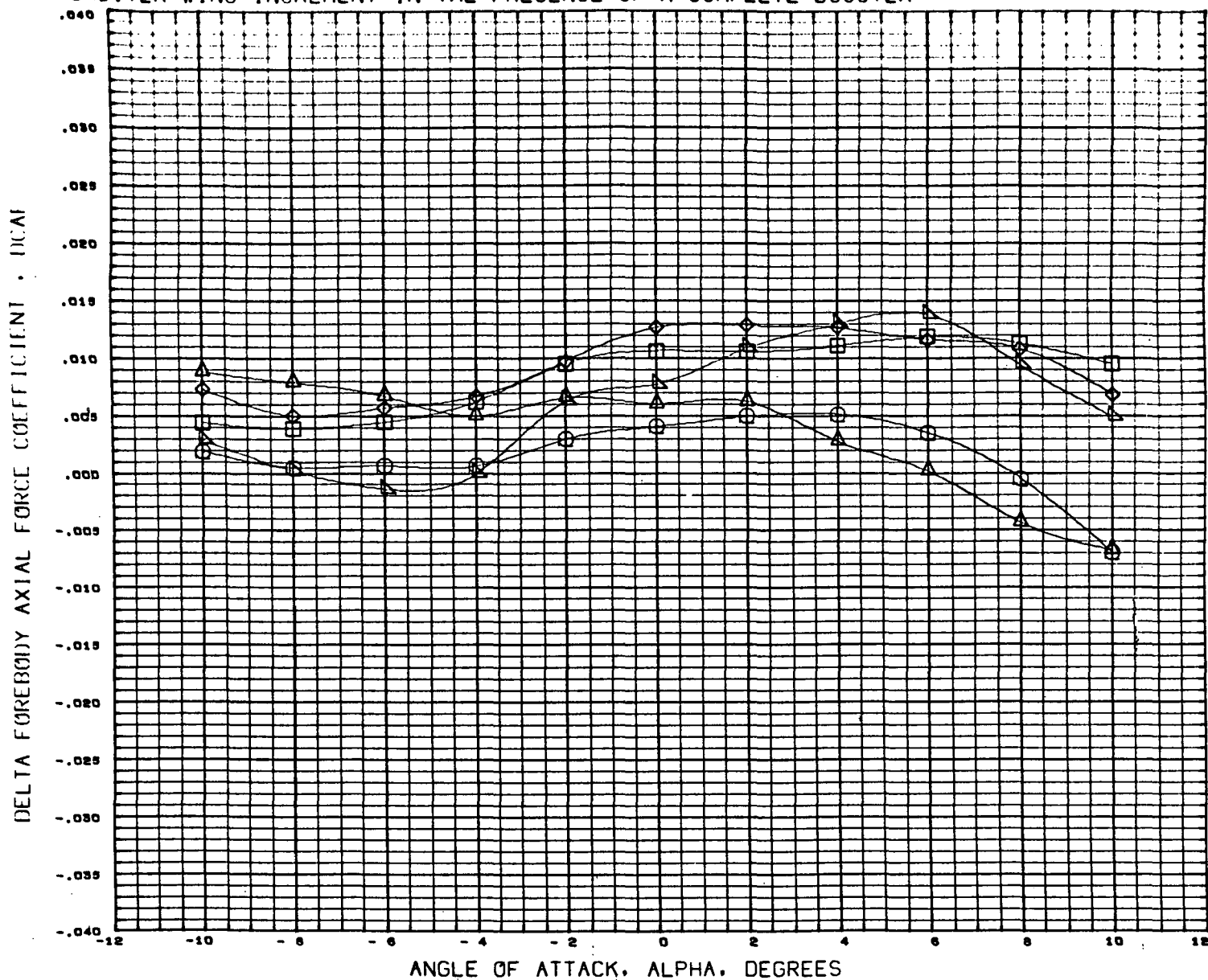
| SYMBOL | MACH | PARAMETRIC VALUES | | | | REFERENCE INFORMATION | | |
|--------|-------|-------------------|-------|--------|-------|-----------------------|---------|--------|
| ○ | 0.600 | BETA | 0.000 | POSITN | 1.000 | SREF | 15.6560 | SQ IN |
| △ | 0.900 | ORBINC | 0.000 | RUDORS | 0.000 | LREF | 3.0950 | INCHES |
| ◇ | 1.100 | ELVATR | 0.000 | AILRON | 0.000 | BREF | 6.0990 | INCHES |
| □ | 1.460 | CANARD | 0.000 | | | XMRP | 0.0000 | |
| ◇ | 1.960 | | | | | YMRP | 0.0000 | |
| ◇ | | | | | | ZMRP | 0.0000 | |
| ◇ | | | | | | SCALE | 0.0035 | SCALE |
| | | DATA HIST. CODE | MVI+C | | | | | |

ORBITER WING INCREMENT IN THE PRESENCE OF A COMPLETE BOOSTER



| SYMBOL | MACH | | PARAMETRIC VALUES | | | | REFERENCE INFORMATION | | |
|--------|-------|-----------------|-------------------|--------|-------|--|-----------------------|---------|--------|
| | | | | | | | | | |
| ○ | 0.600 | BETA | 0.000 | POSITN | 1.000 | | SREF | 15.6560 | SQ IN |
| △ | 0.900 | ORBINC | 0.000 | RUDORB | 0.000 | | LREF | 3.0950 | INCHES |
| ◇ | 1.100 | ELVATR | 0.000 | AILRON | 0.000 | | BREF | 6.0990 | INCHES |
| ◻ | 1.400 | CANARD | 0.000 | | | | XMRP | 0.0000 | |
| ◼ | 1.960 | | | | | | YMRP | 0.0000 | |
| | | | | | | | ZMRP | 0.0000 | |
| | | | | | | | SCALE | 0.0035 | SCALE |
| | | DATA HIST. CODE | MVI*C | | | | | | |

ORBITER WING INCREMENT IN THE PRESENCE OF A COMPLETE BOOSTER

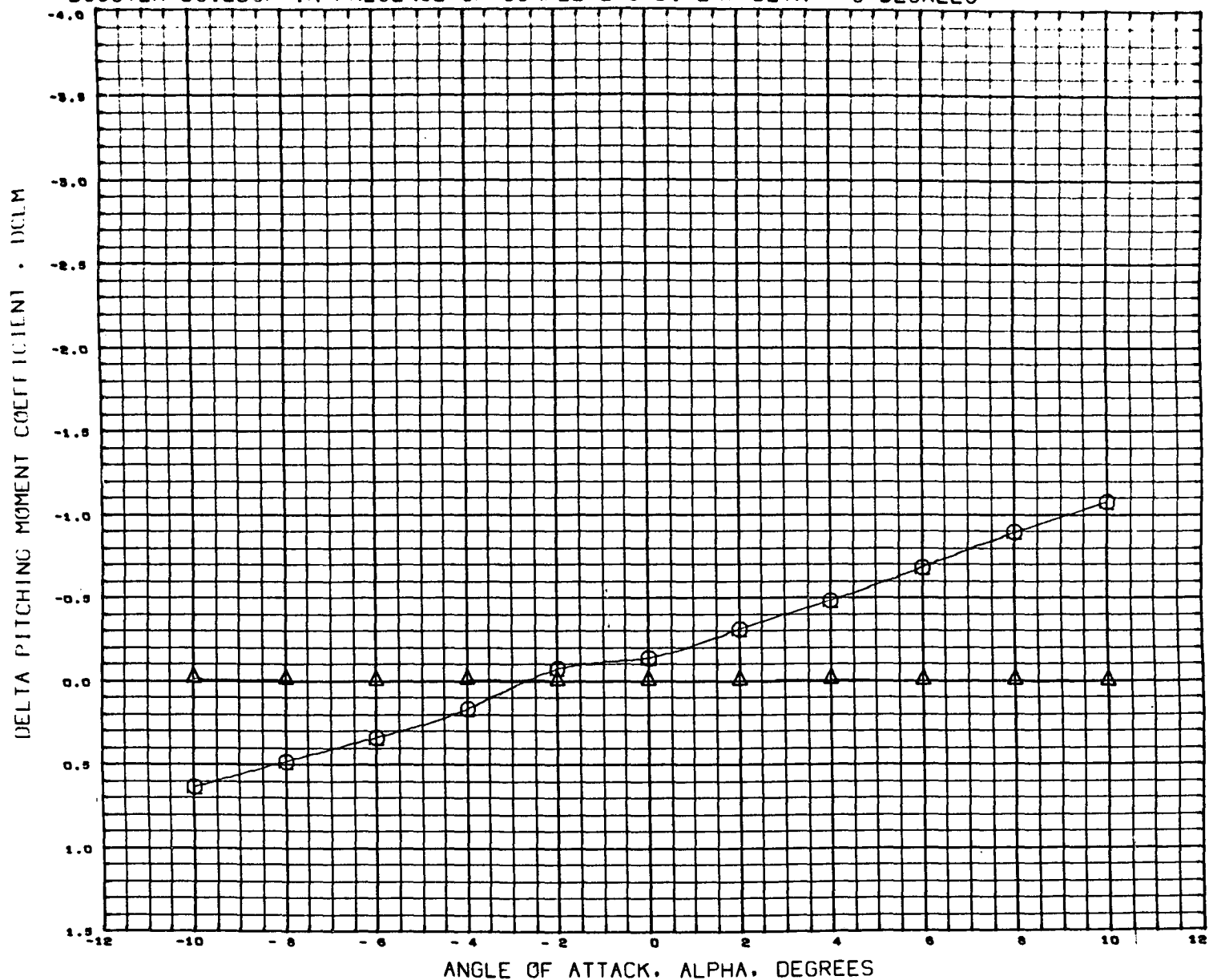


| SYMBOL | MACH | PARAMETRIC VALUES |
|--------|-------|---------------------------|
| △ | 0.600 | BETA 0.000 POSITN 1.000 |
| ◇ | 0.900 | ORBINC 0.000 RUDORB 0.000 |
| ○ | 1.100 | ELVATR 0.000 AILRON 0.000 |
| □ | 1.400 | CANARD 0.000 |
| × | 1.900 | |

DATA HIST. CODE MVI=C

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

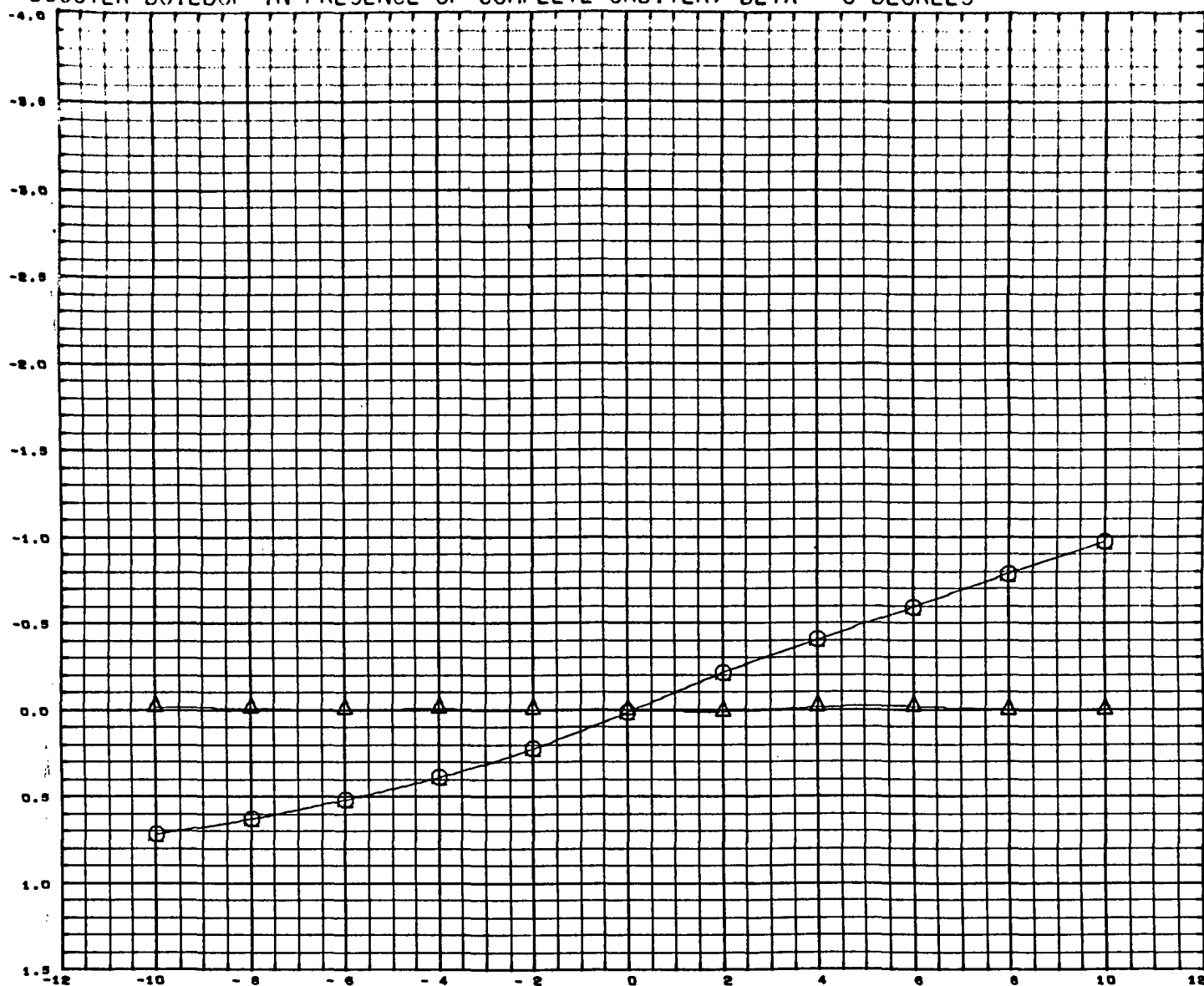


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B3W17V17) - (B20+B3W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B3W17V17-B20C4BW14+B3W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

DELTA PITCHING MOMENT COEFFICIENT - DCLM



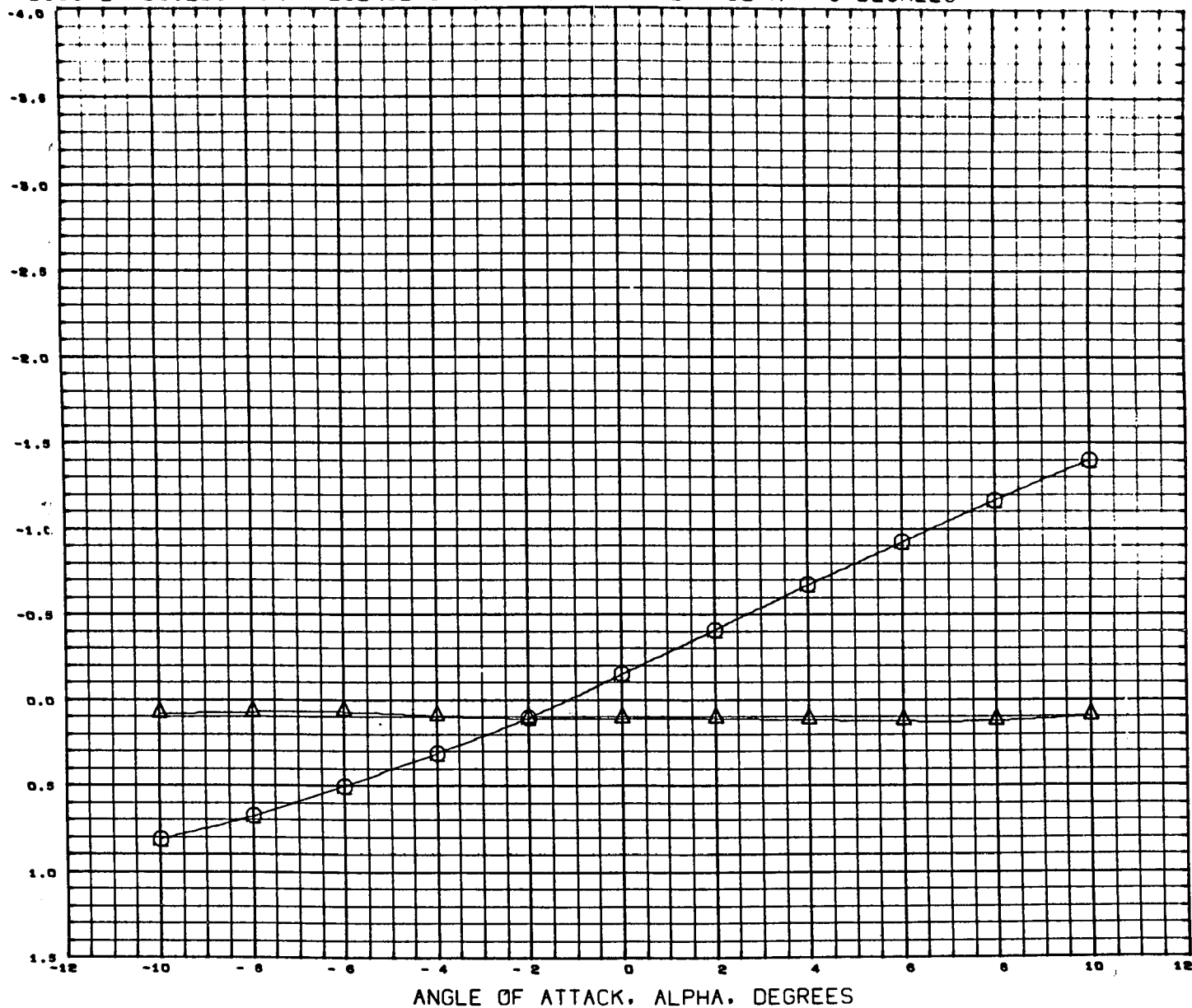
ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17)-(B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

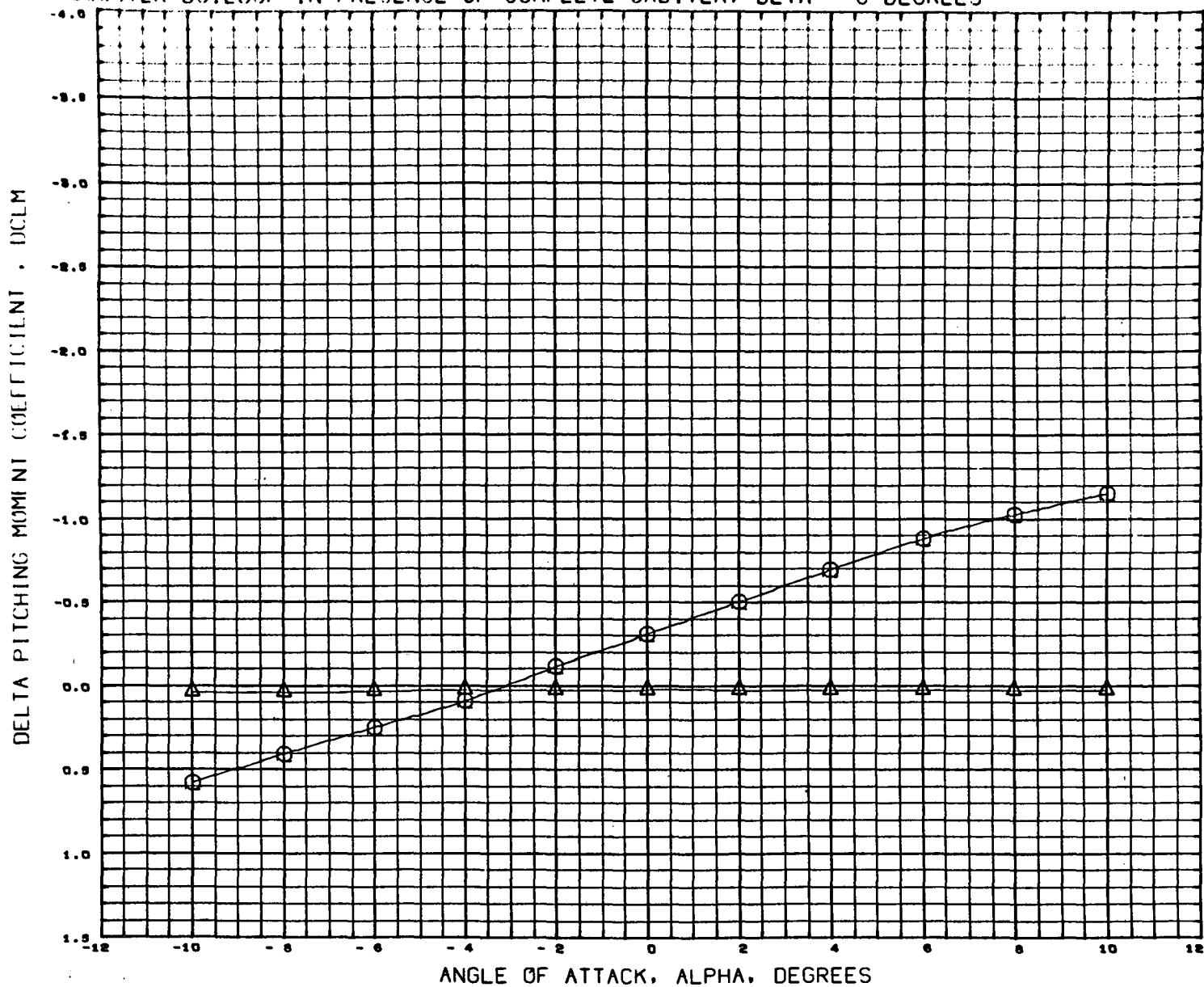
DELTA PITCHING MOMENT COEFFICIENT - DCLM



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B2D+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 19.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRF | 0.0000 |
| | | | | | | YMRF | 0.0000 |
| | | | | | | ZMRF | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.100

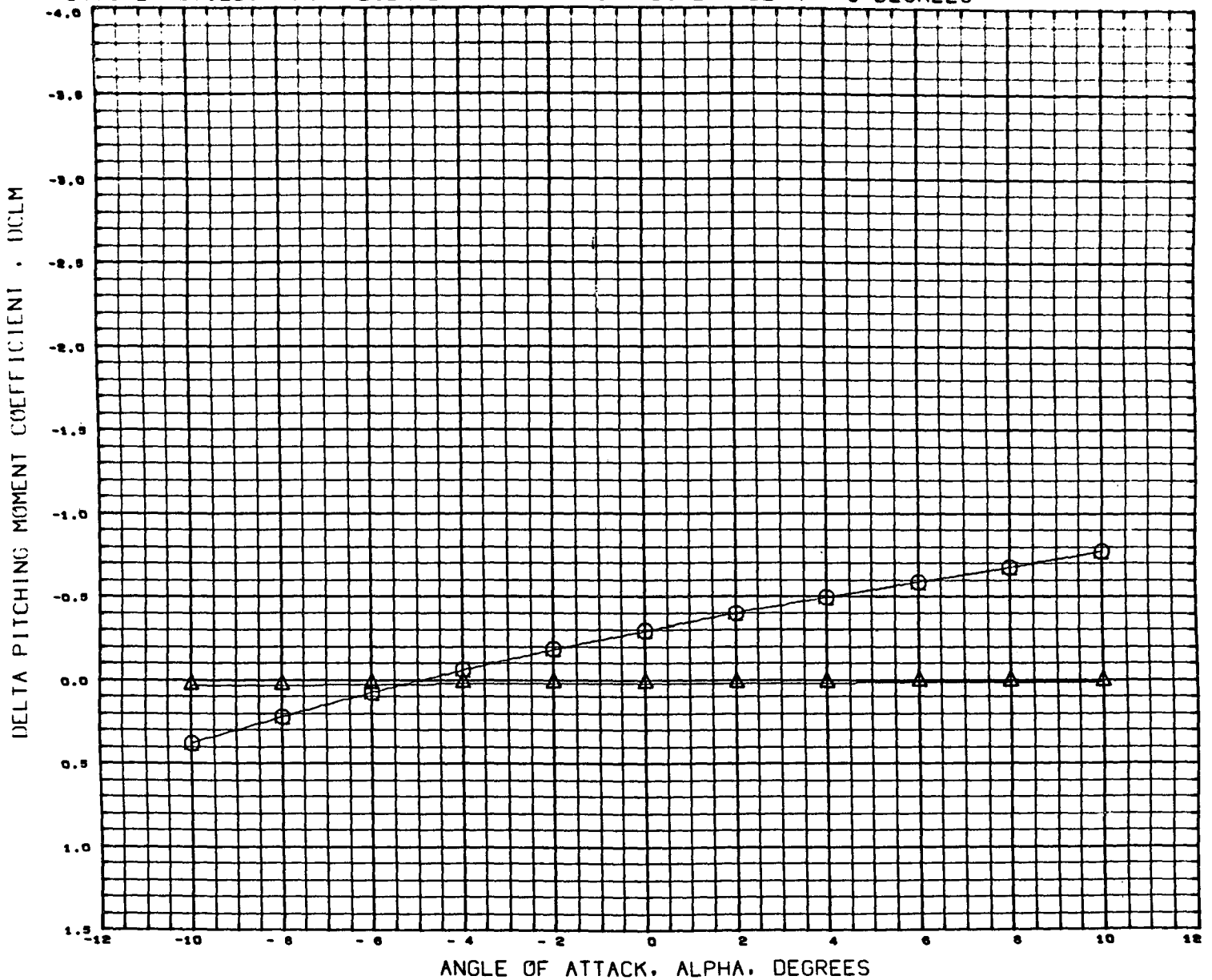
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.460

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER. BETA = 6 DEGREES

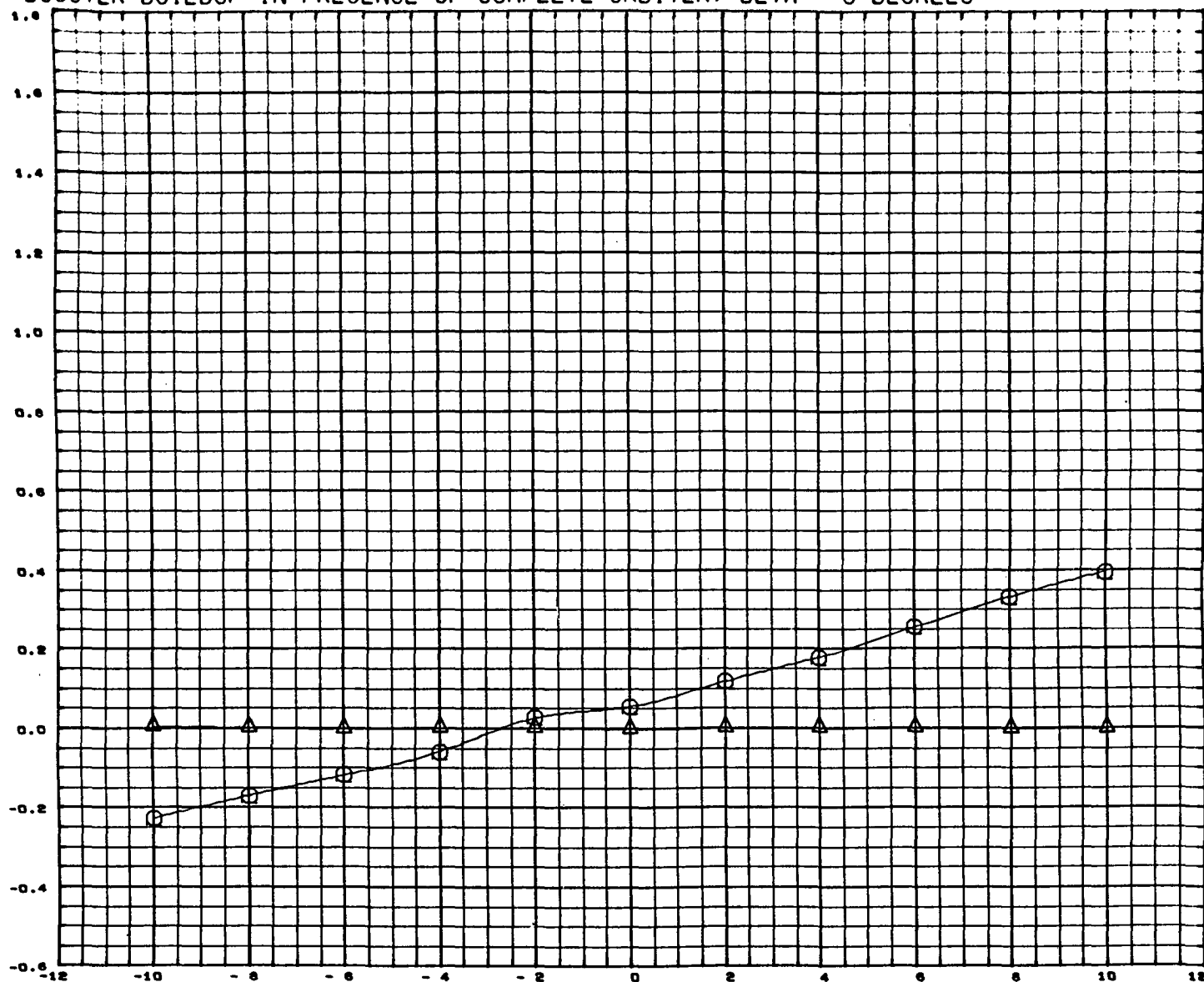


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

DELTA NORMAL FORCE COEFFICIENT, ΔC_N

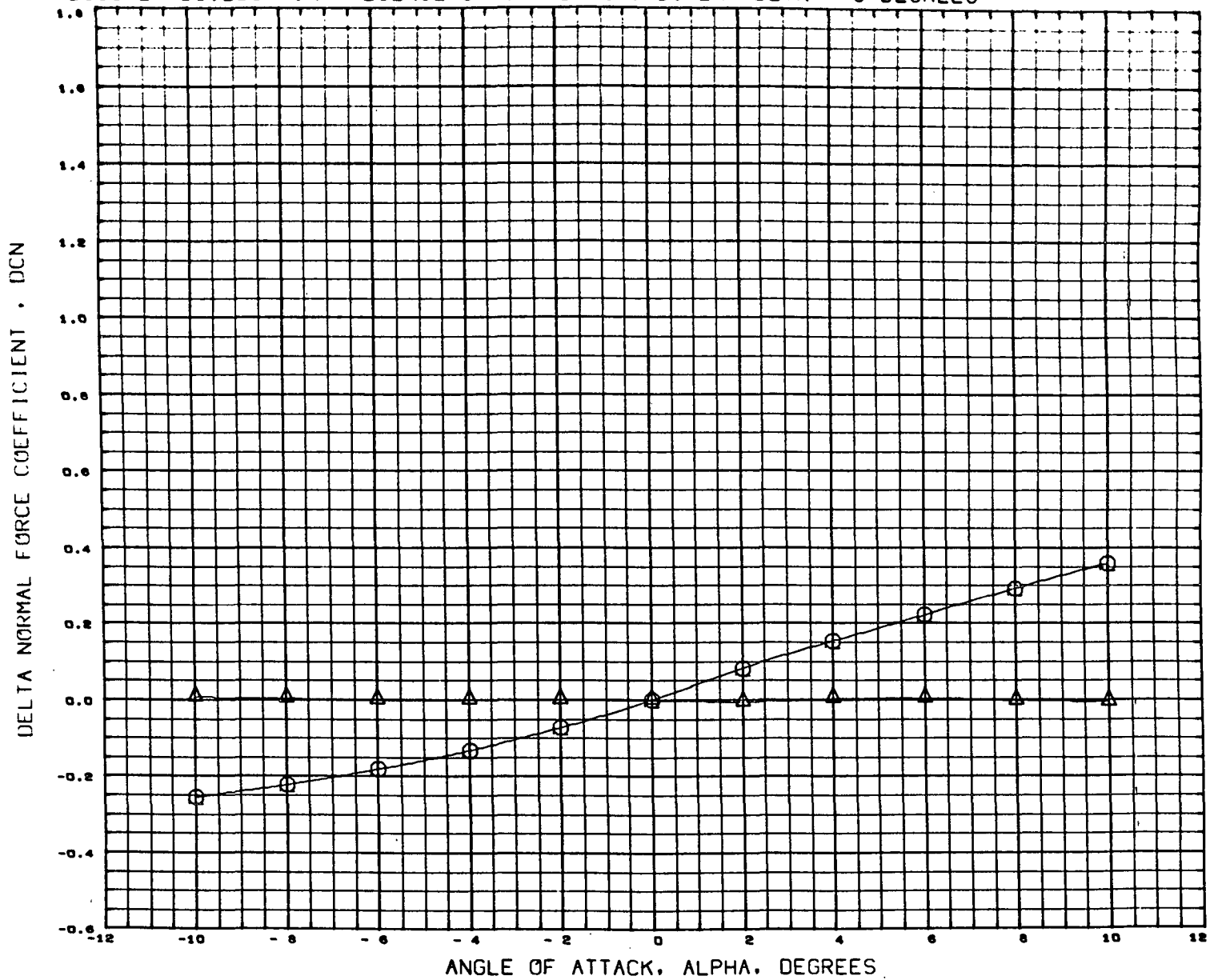


ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B3W17V17)-(B20+B3W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B3W17V17-B20C4BW14+B3W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

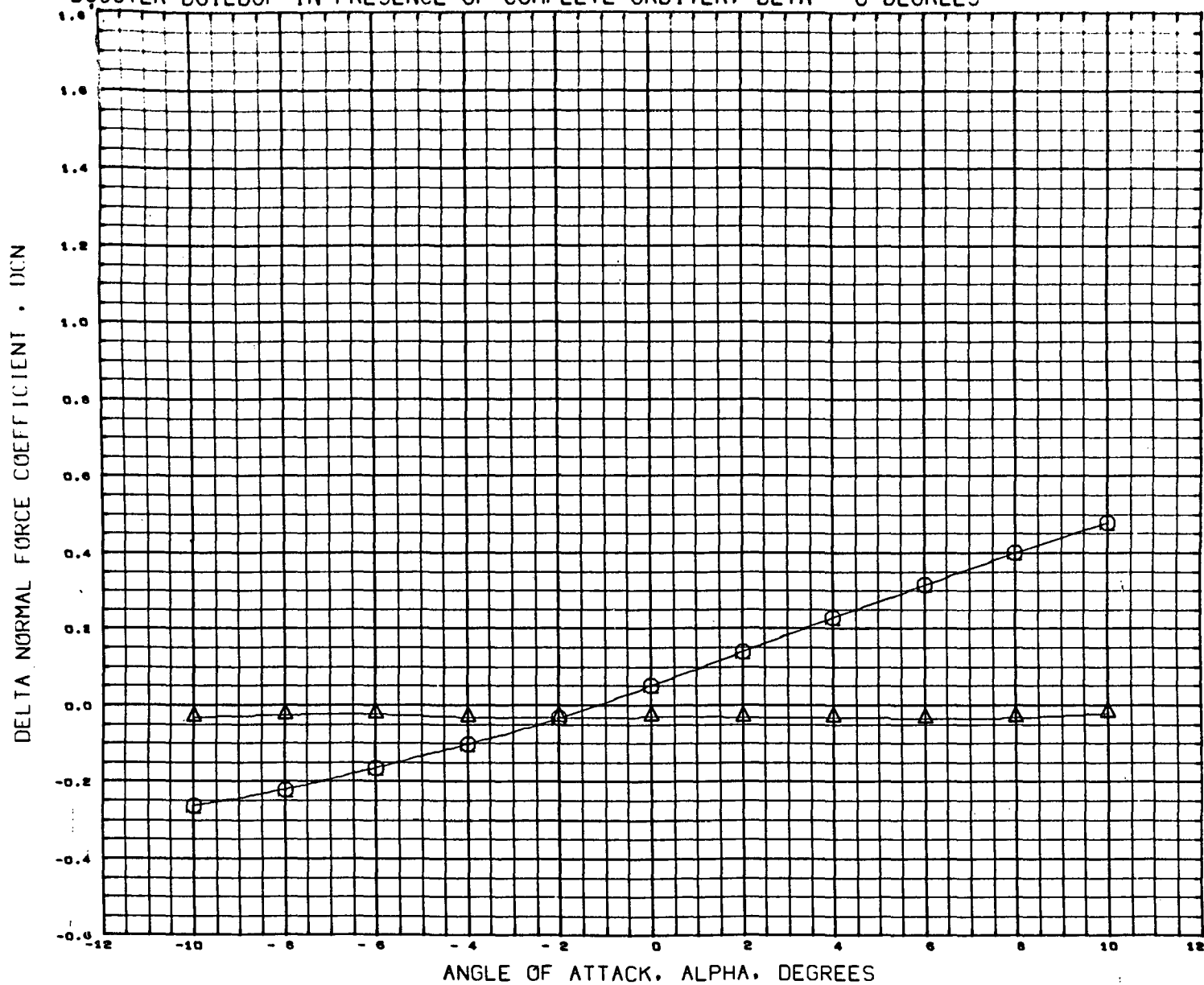
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17)~(B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V6+B5W17V17~B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

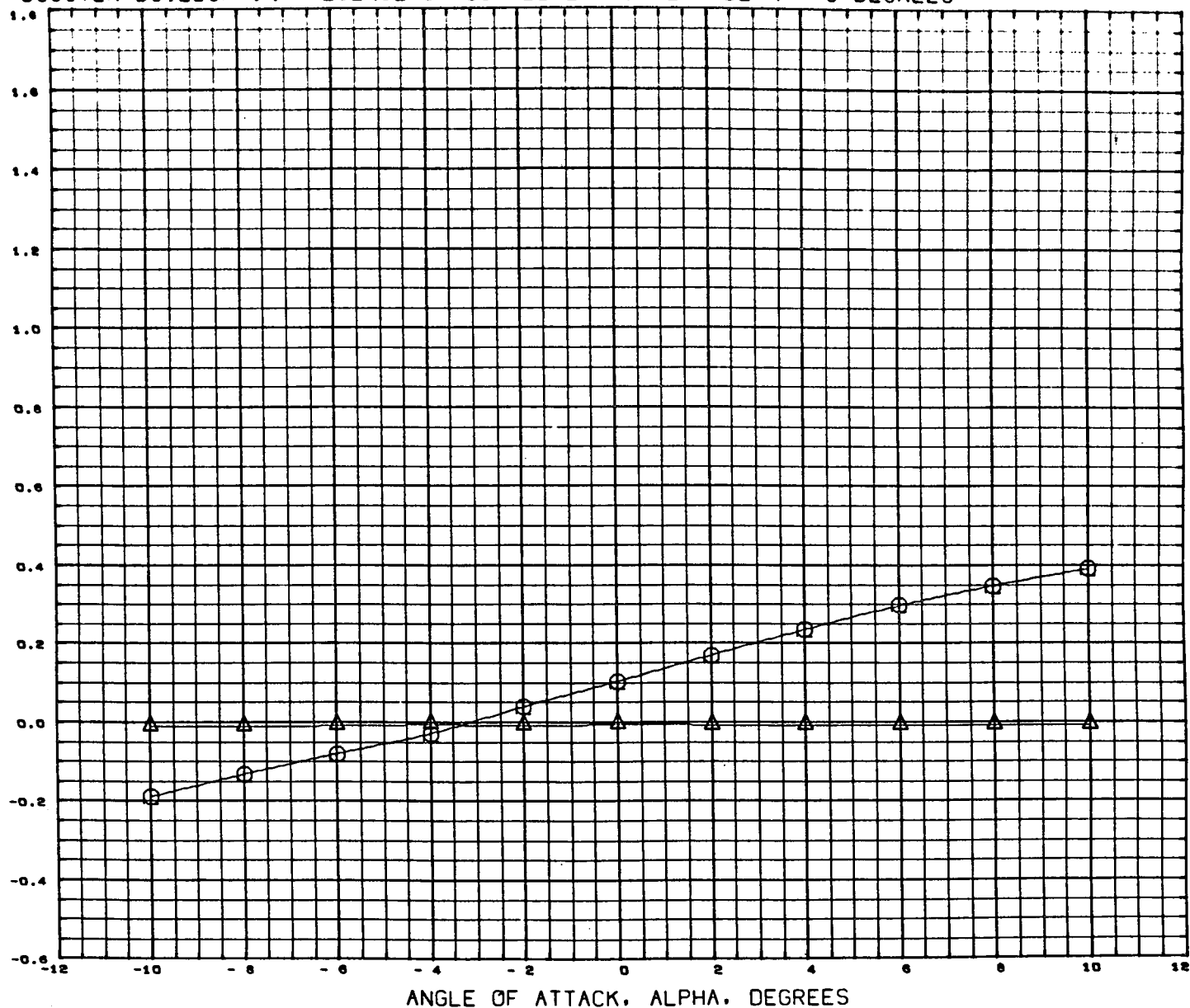


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17)-(B20+B5W17V17) | 6.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.100

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

DELTA NORMAL FORCE COEFFICIENT, ΔC_N

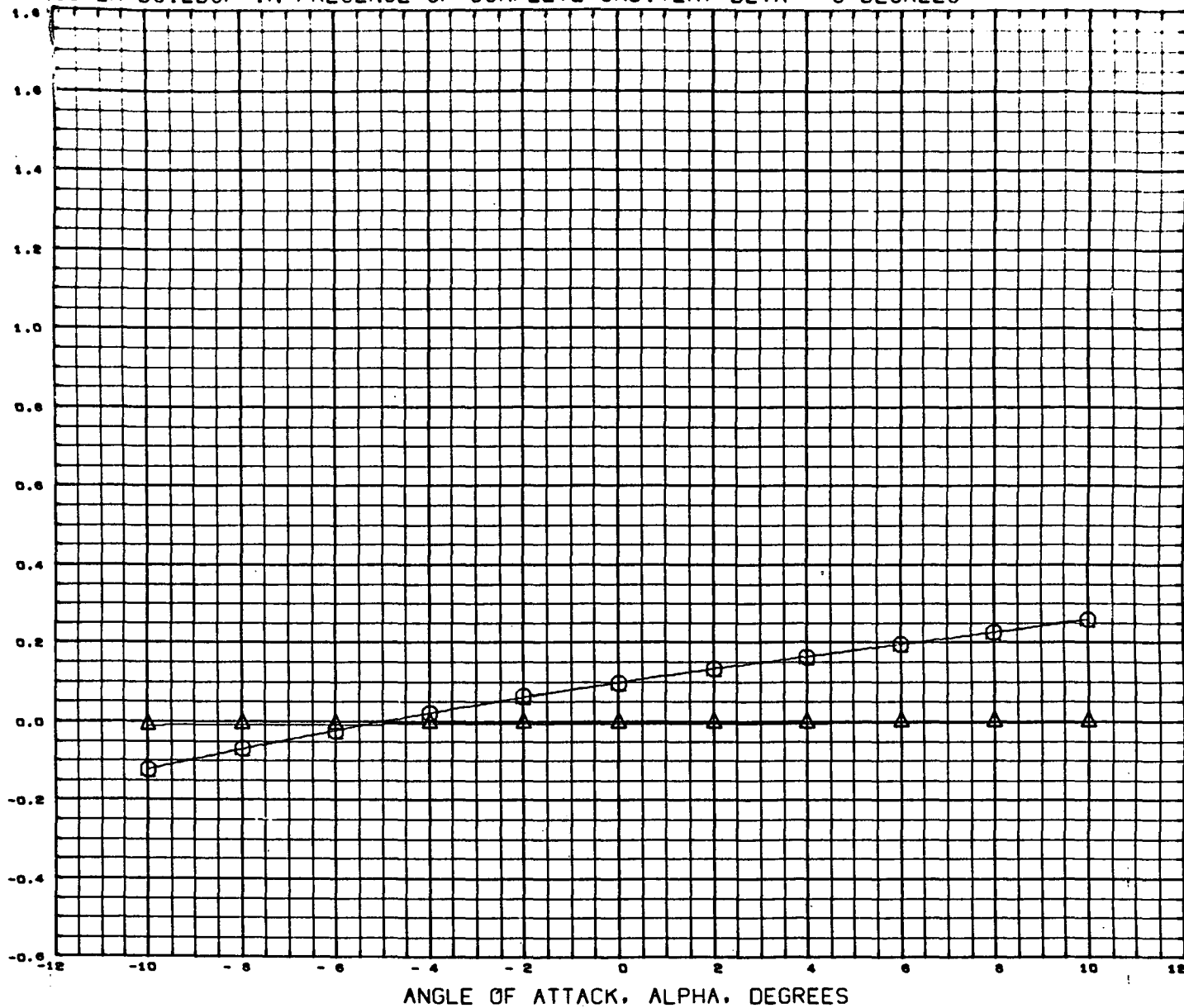


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) ~ (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.460

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER. BETA = 6 DEGREES

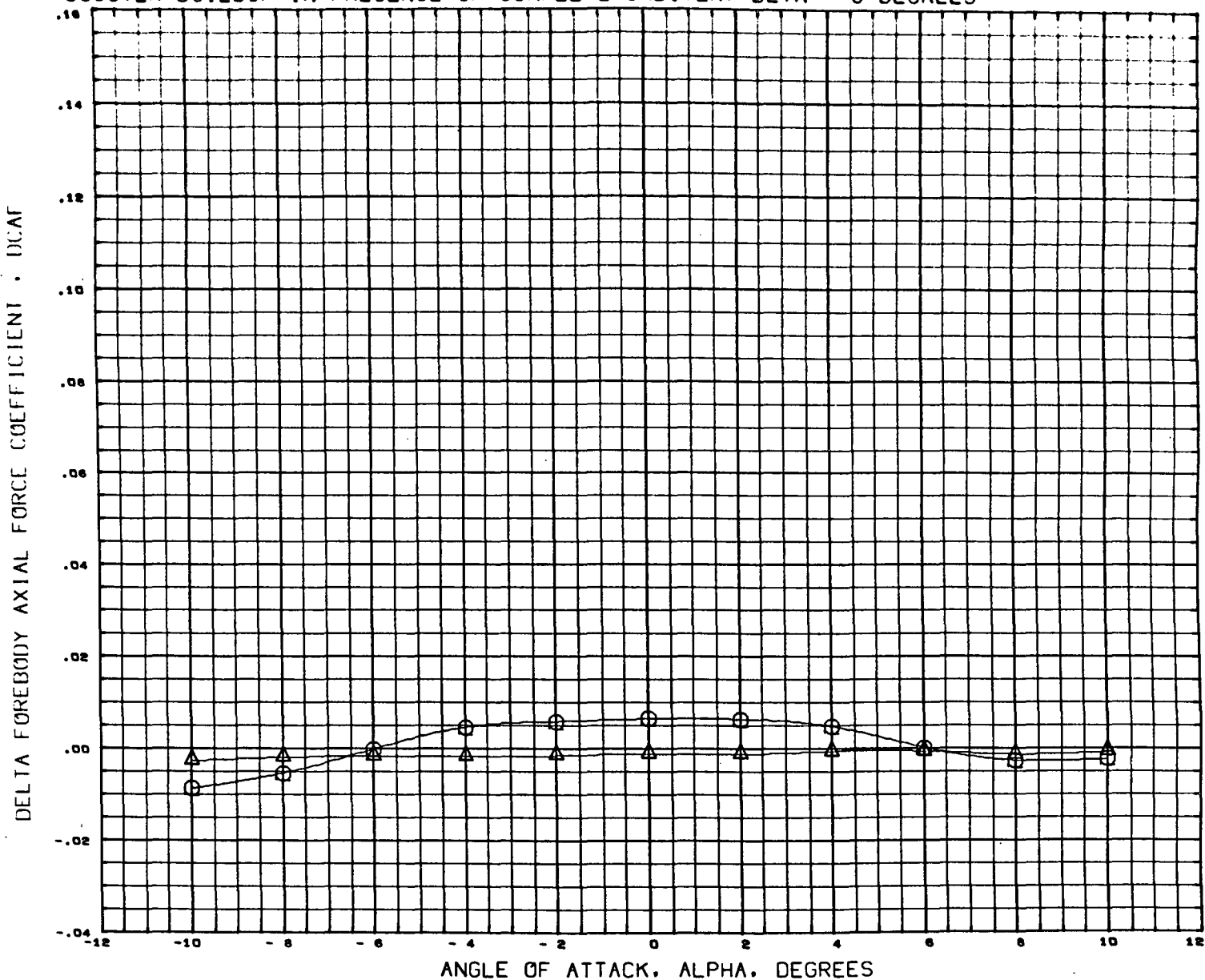
DELTA NORMAL FORCE COEFFICIENT - DCN



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17)-(B20+B5W17V17) | 6.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

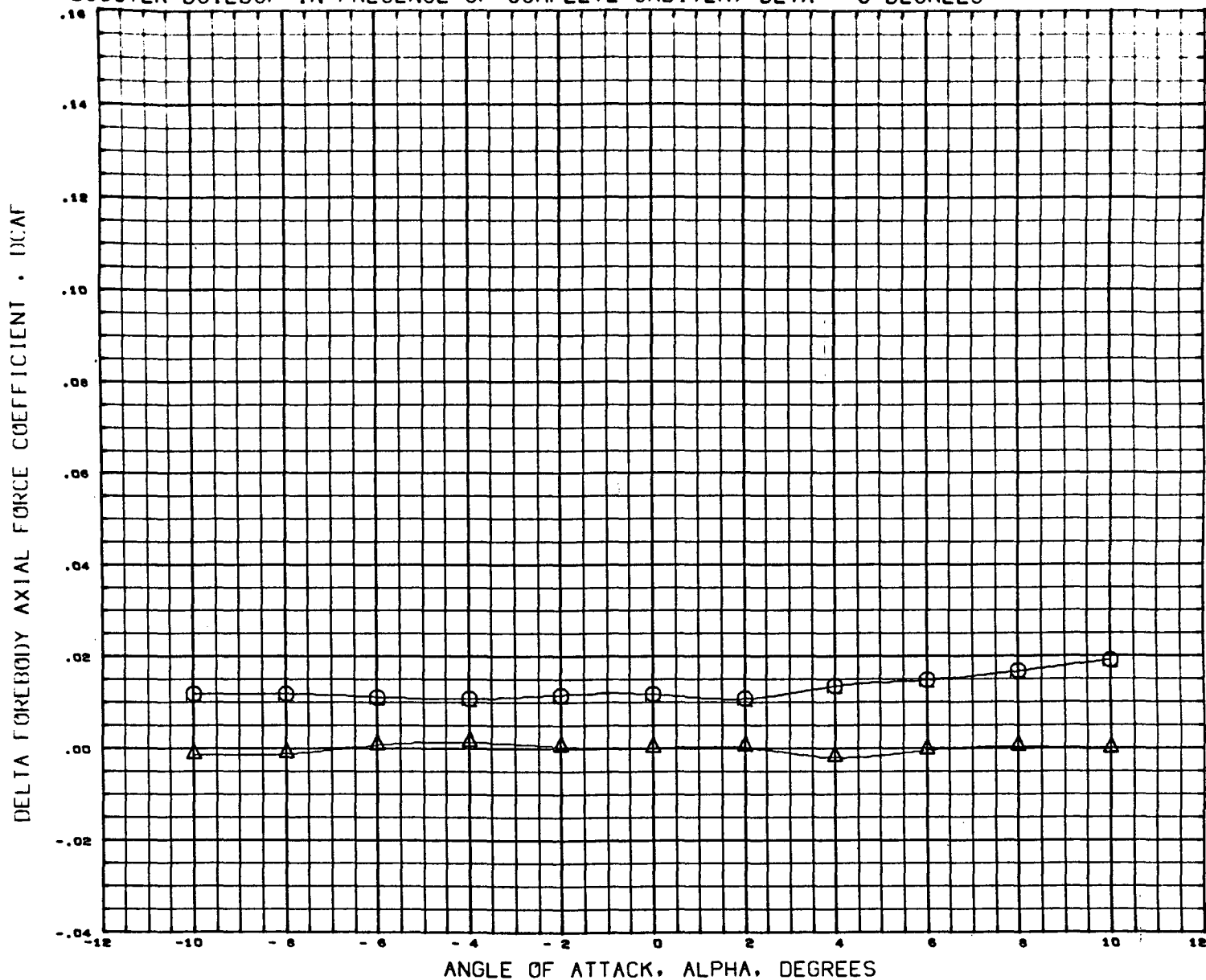
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

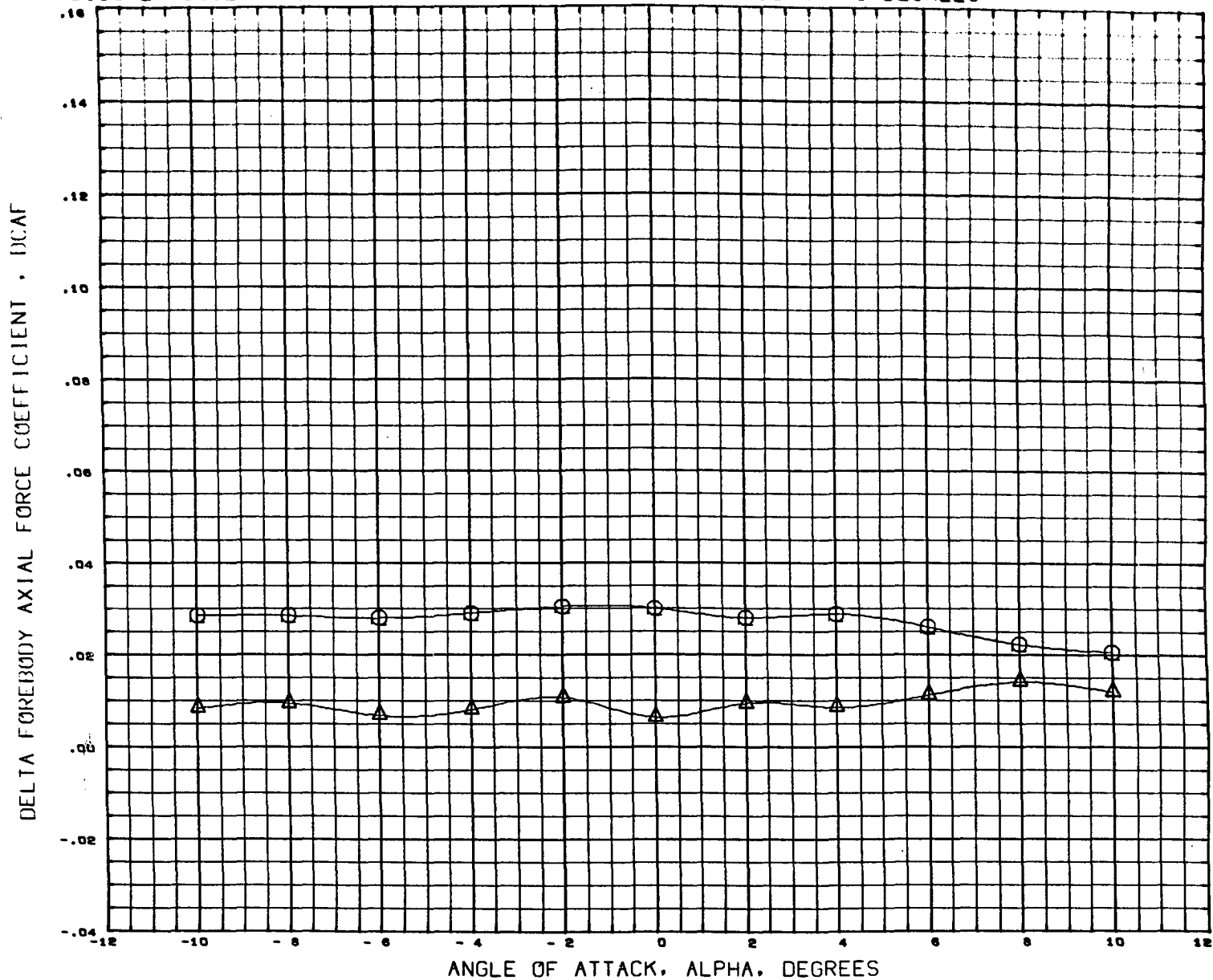
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------|--------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 | SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 | INCHES |
| | | | | | | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 0.900

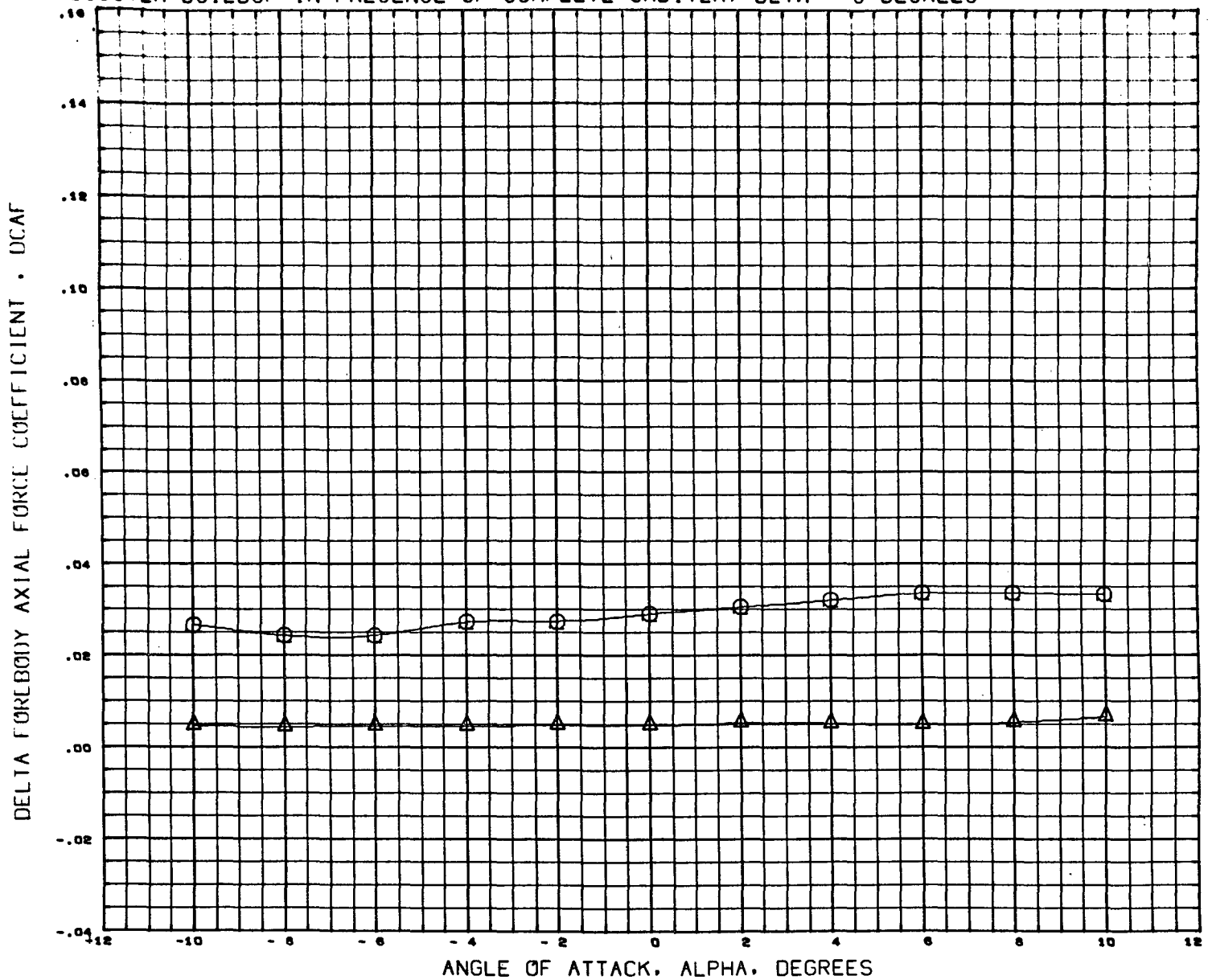
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.100

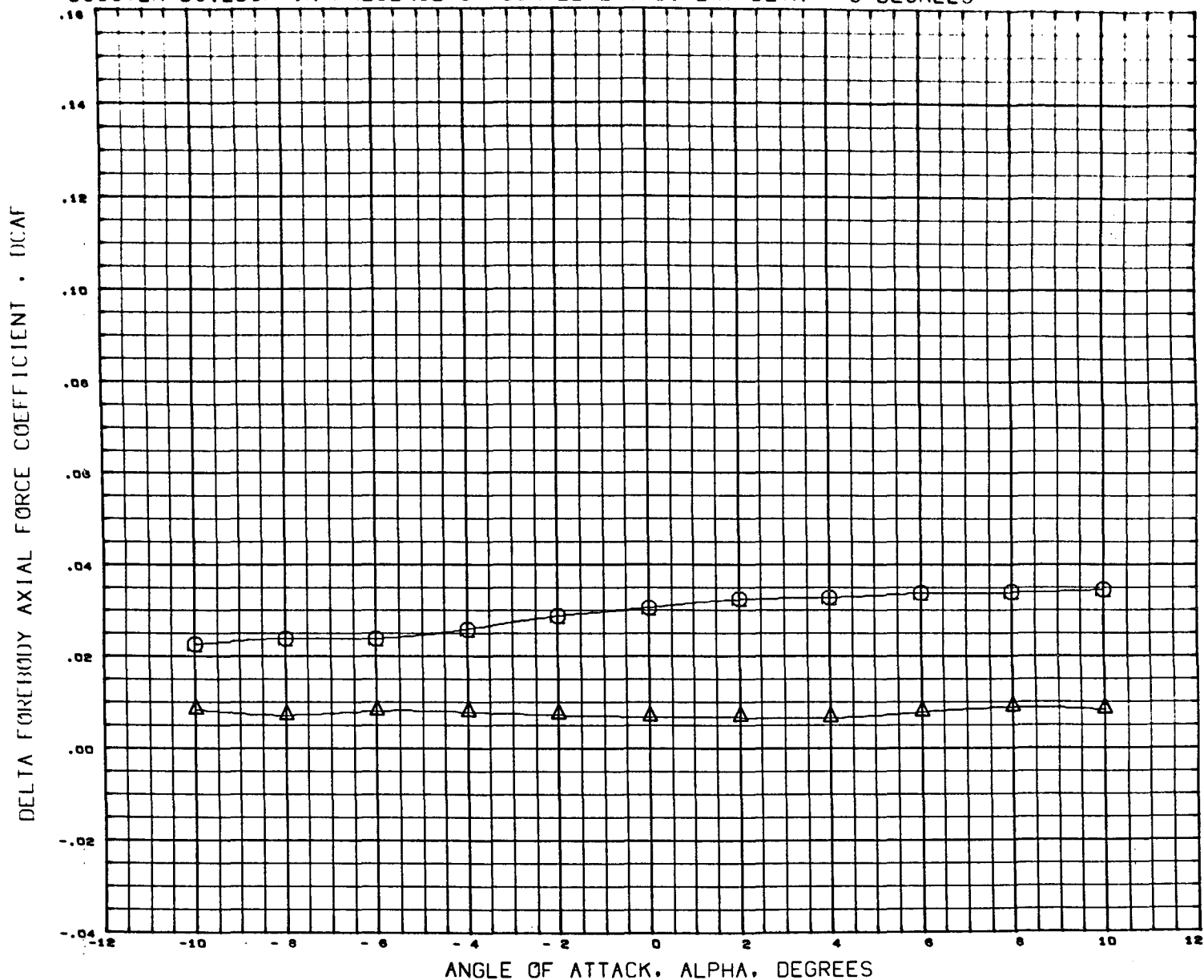
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0950 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.460

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

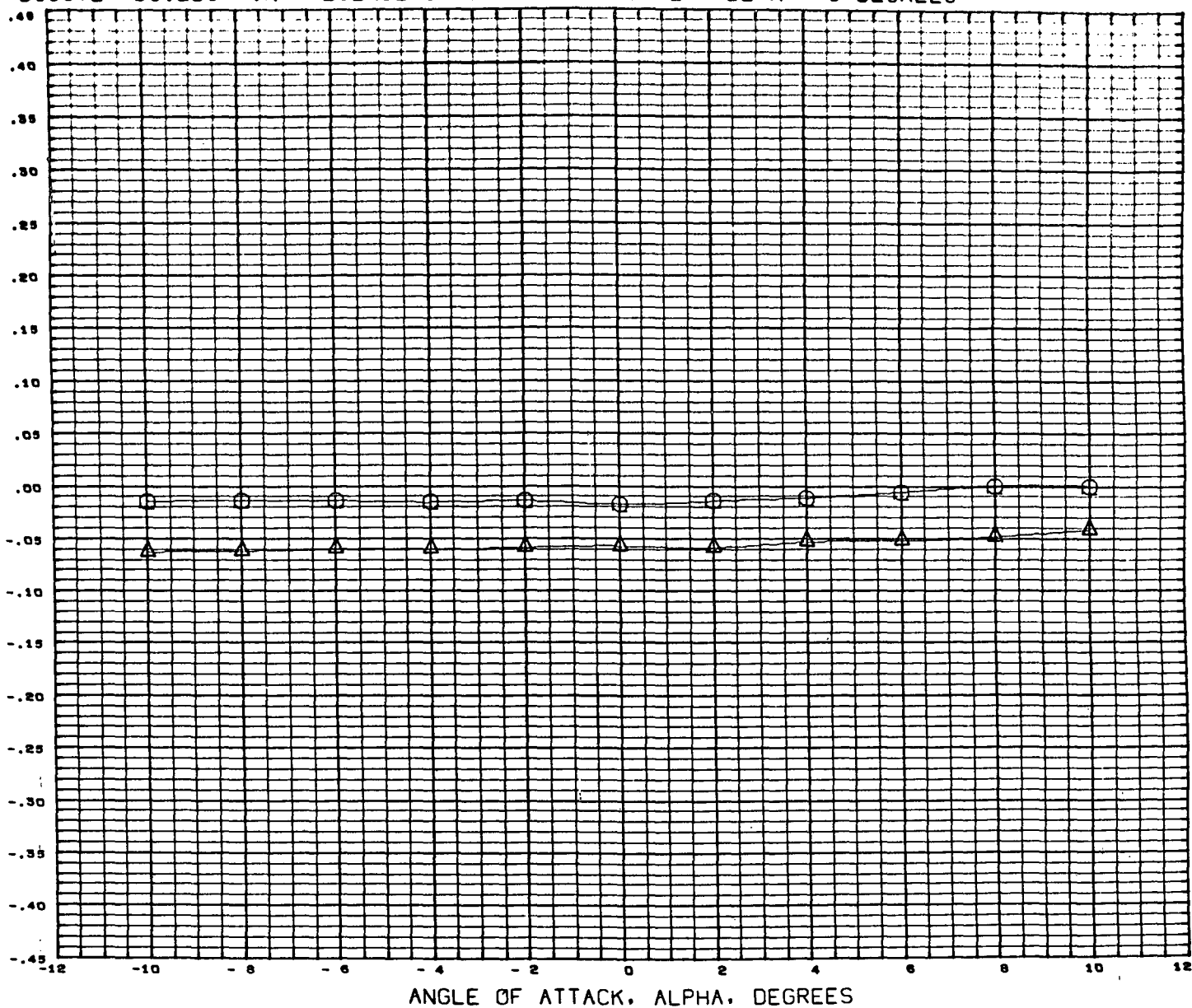


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

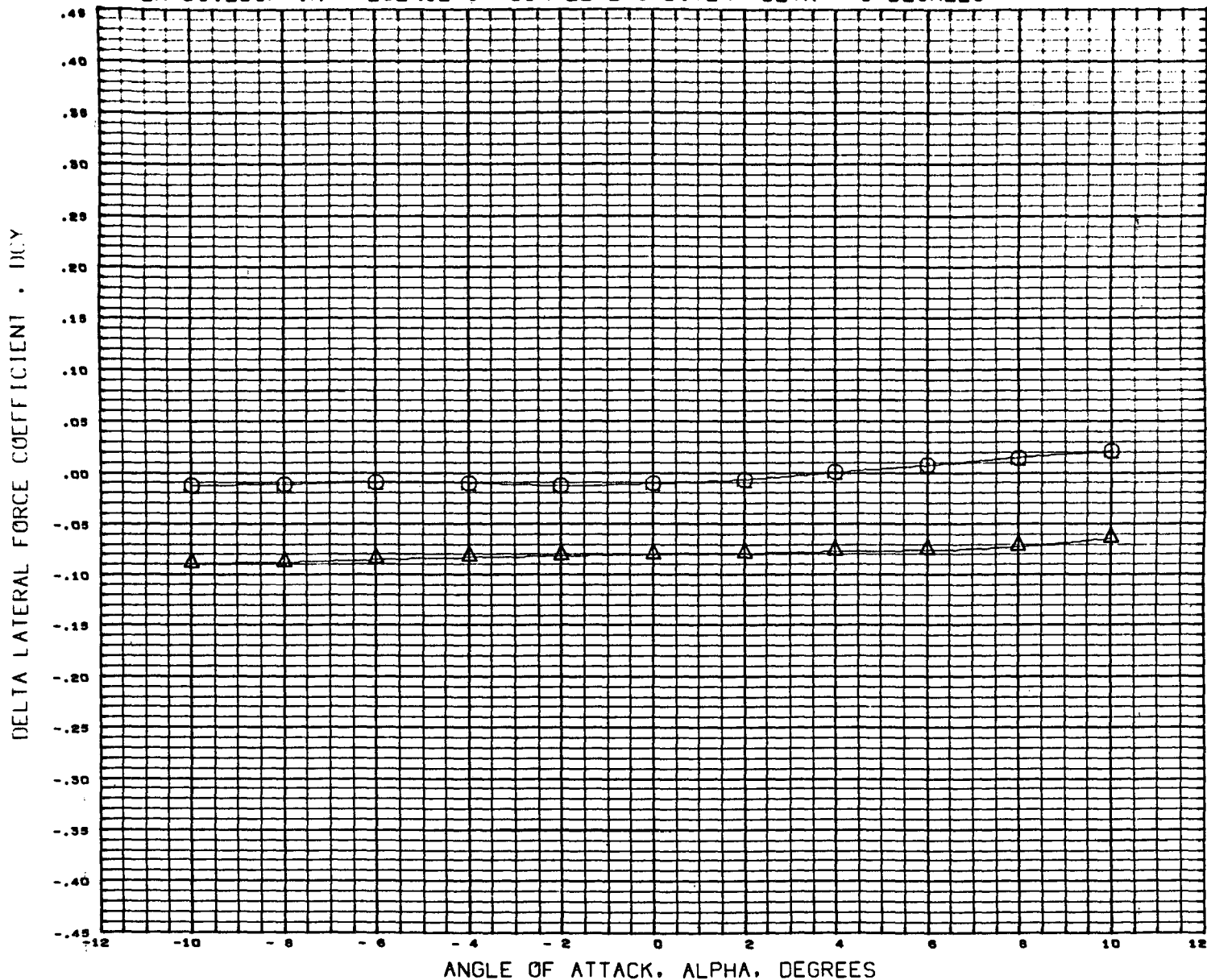
DELTA LATERAL FORCE COEFFICIENT, DCY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------|--------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17)-(B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 | 50 IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 | INCHES |
| | | | | | | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 0.900

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

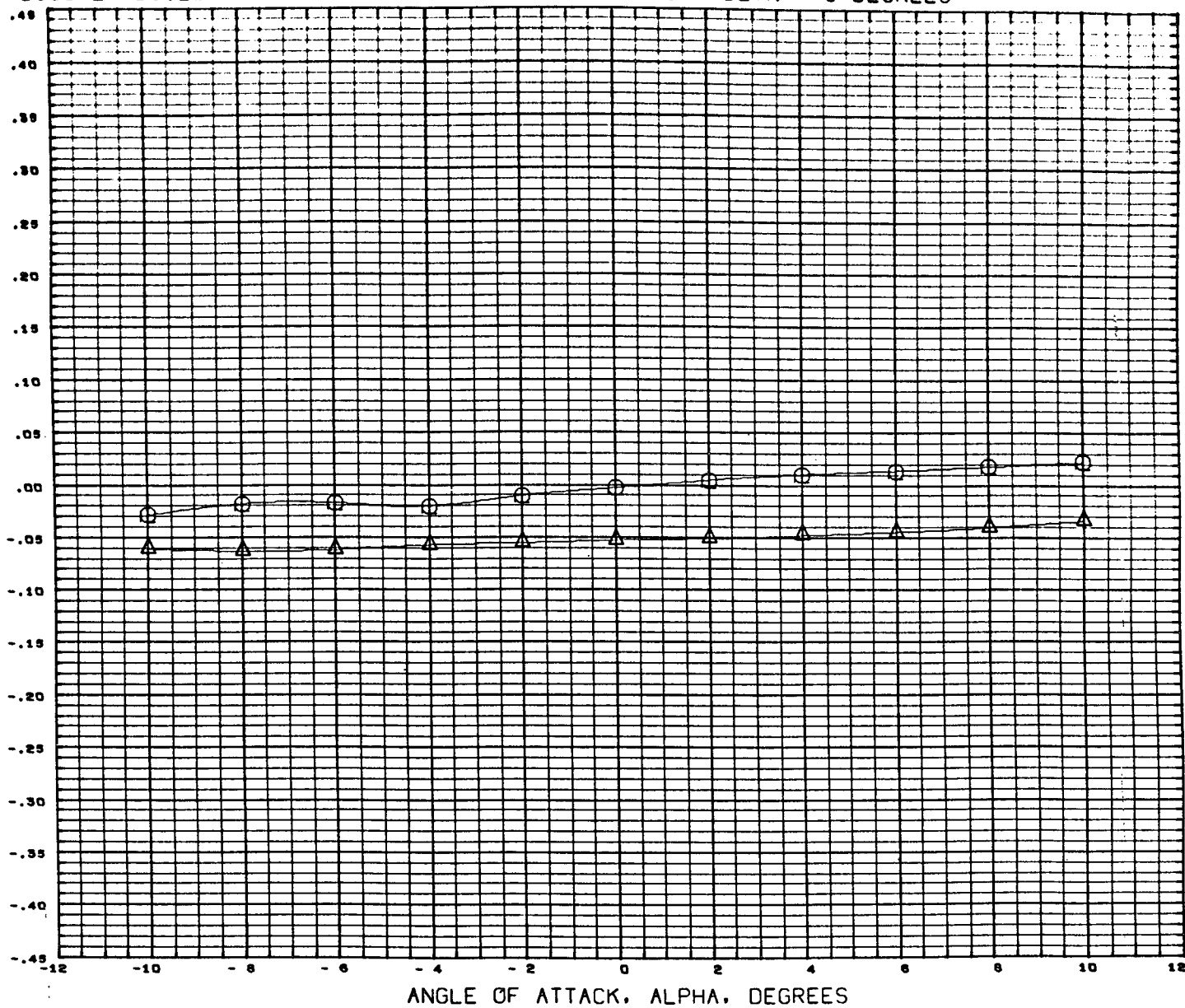


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 19.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V6+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.100

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

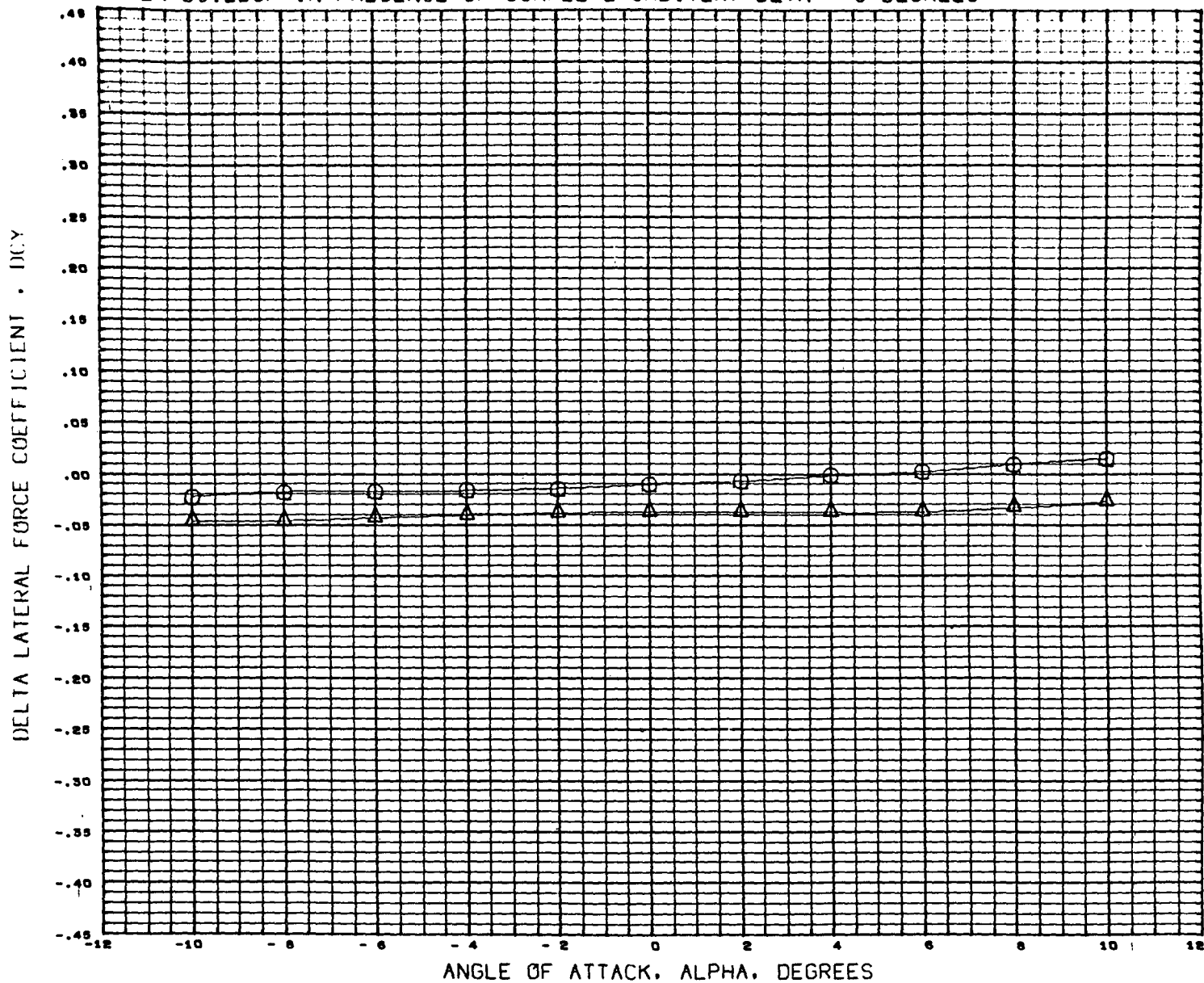
DELTA LATERAL FORCE COEFFICIENT, DCY



| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|----------|--------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | ○ | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | △ | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | | BREF | 6.0990 INCHES |
| | | | | | | | XMRP | 0.0000 |
| | | | | | | | YMRP | 0.0000 |
| | | | | | | | ZMRP | 0.0000 |
| | | | | | | | SCALE | 0.0035 SCALE |

MACH 1.460

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

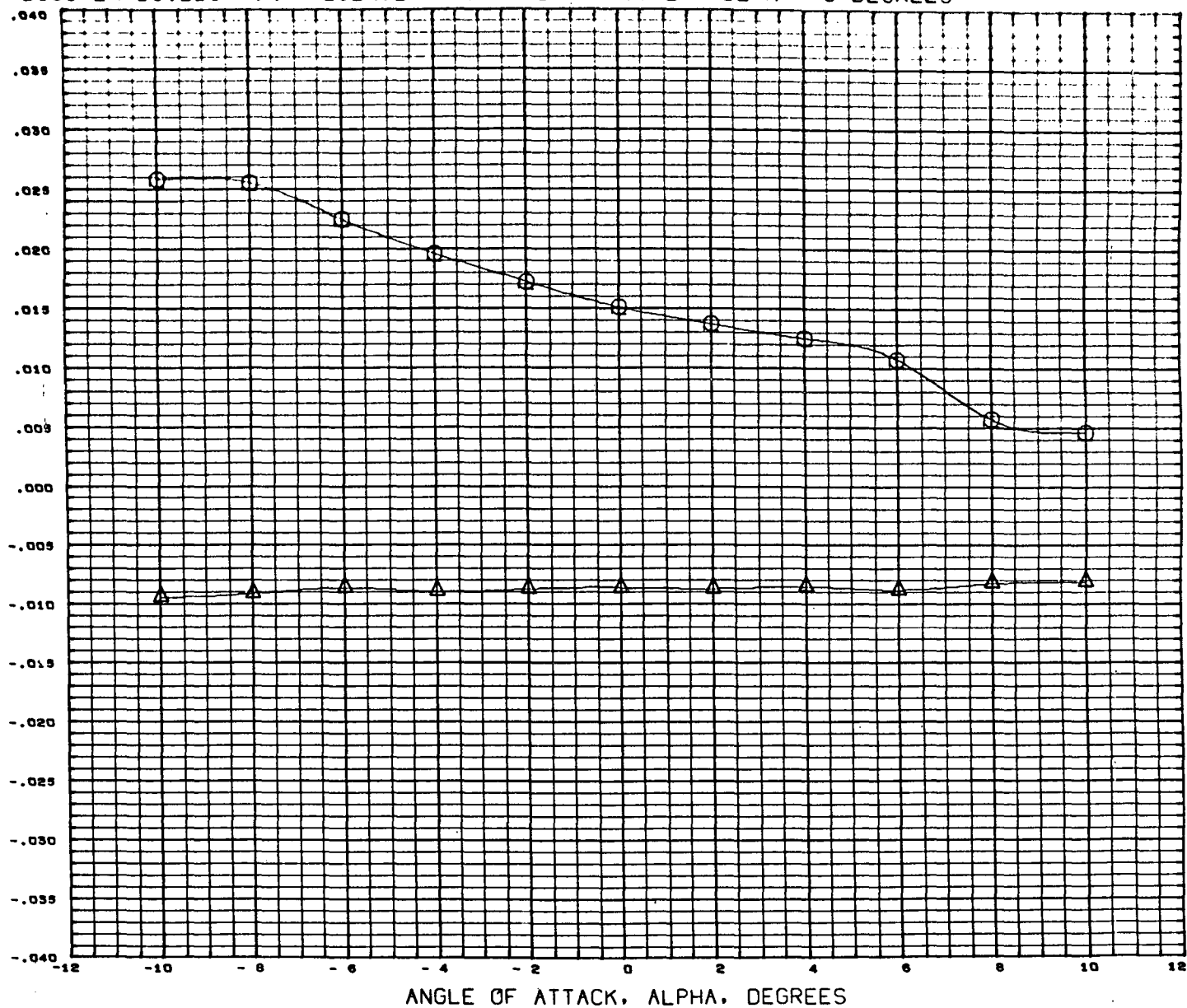


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

DELTA ROLLING MOMENT COEFFICIENT, DUBL

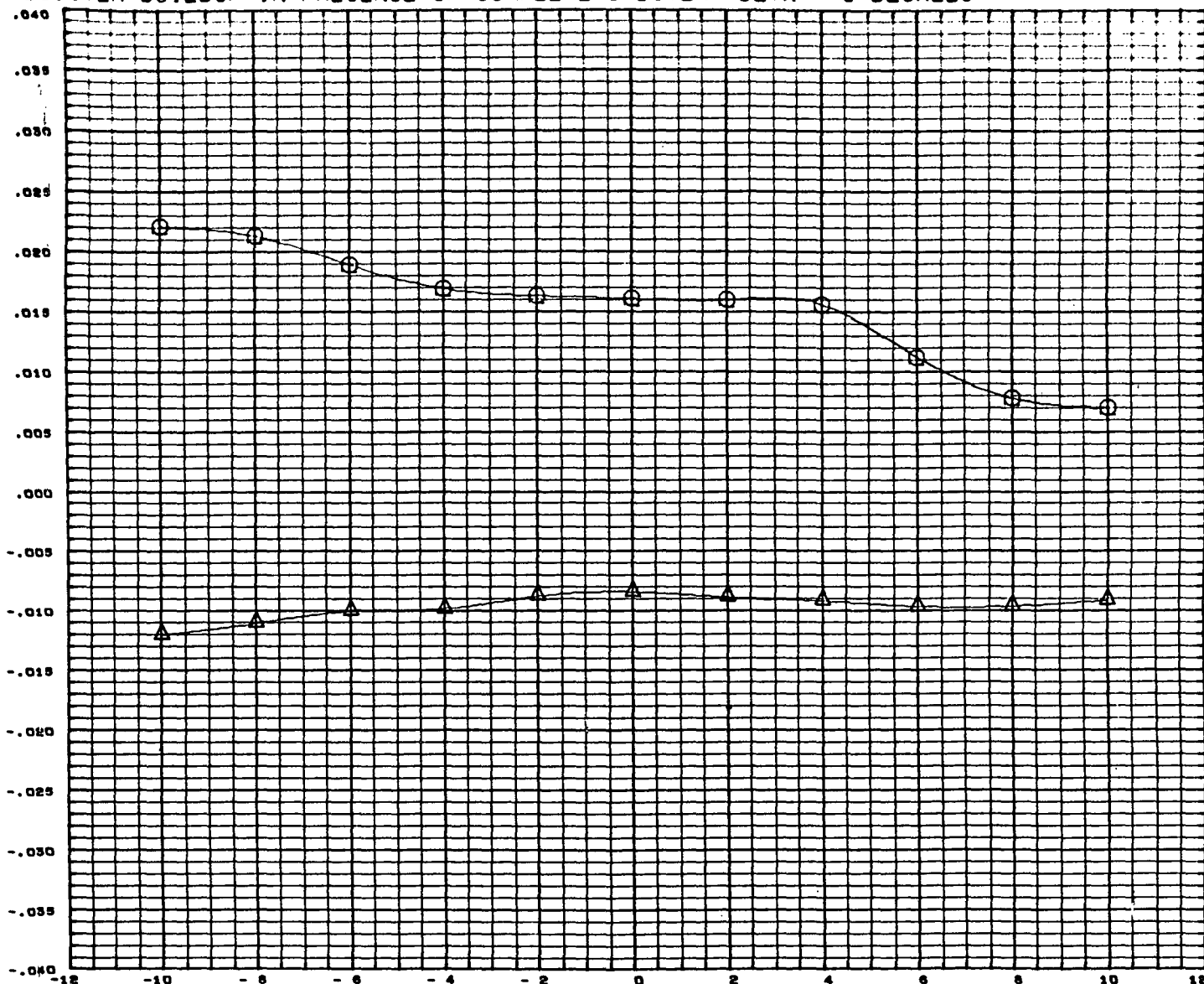


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | 0.000 | 0.000 | 1.000 | SREF | 19.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

DELTA ROLLING MOMENT COEFFICIENT - DCRL

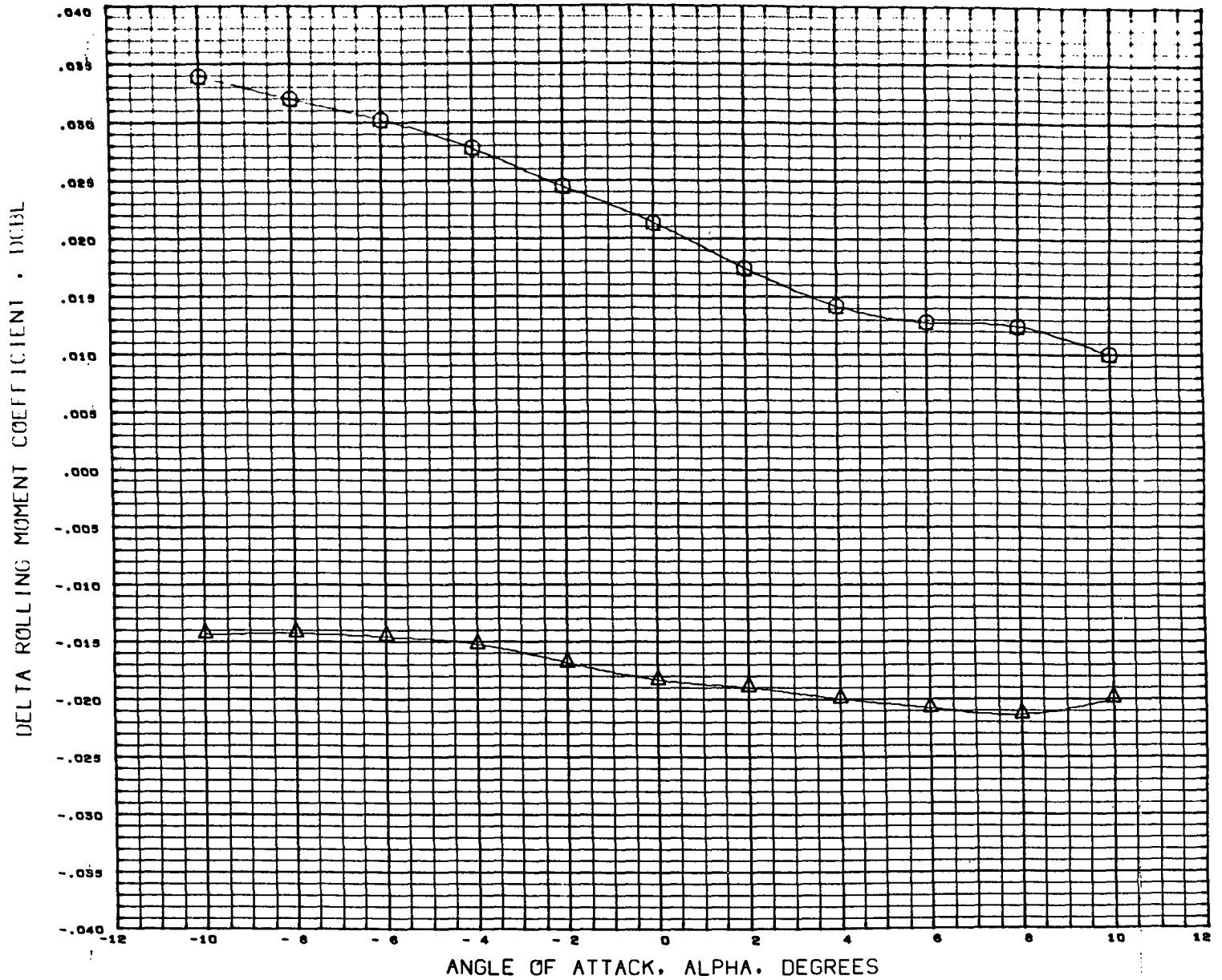


ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17)-(B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6960 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

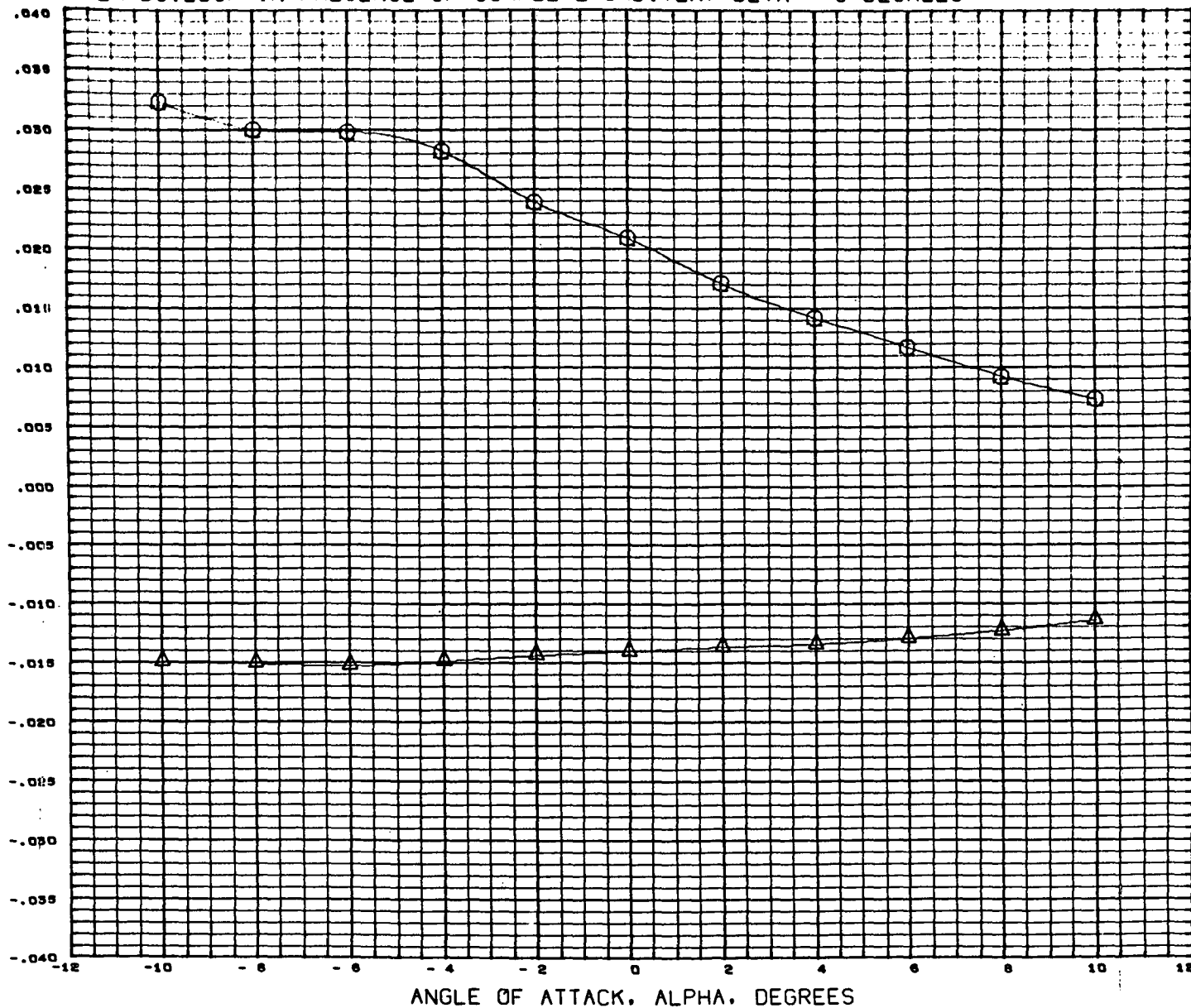


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------|--------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17)-(B20+B5W17V17) | 6.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 | 50 IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 | INCHES |
| | | | | | | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 1.100

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

DELTA ROLLING MOMENT COEFFICIENT - DCBL

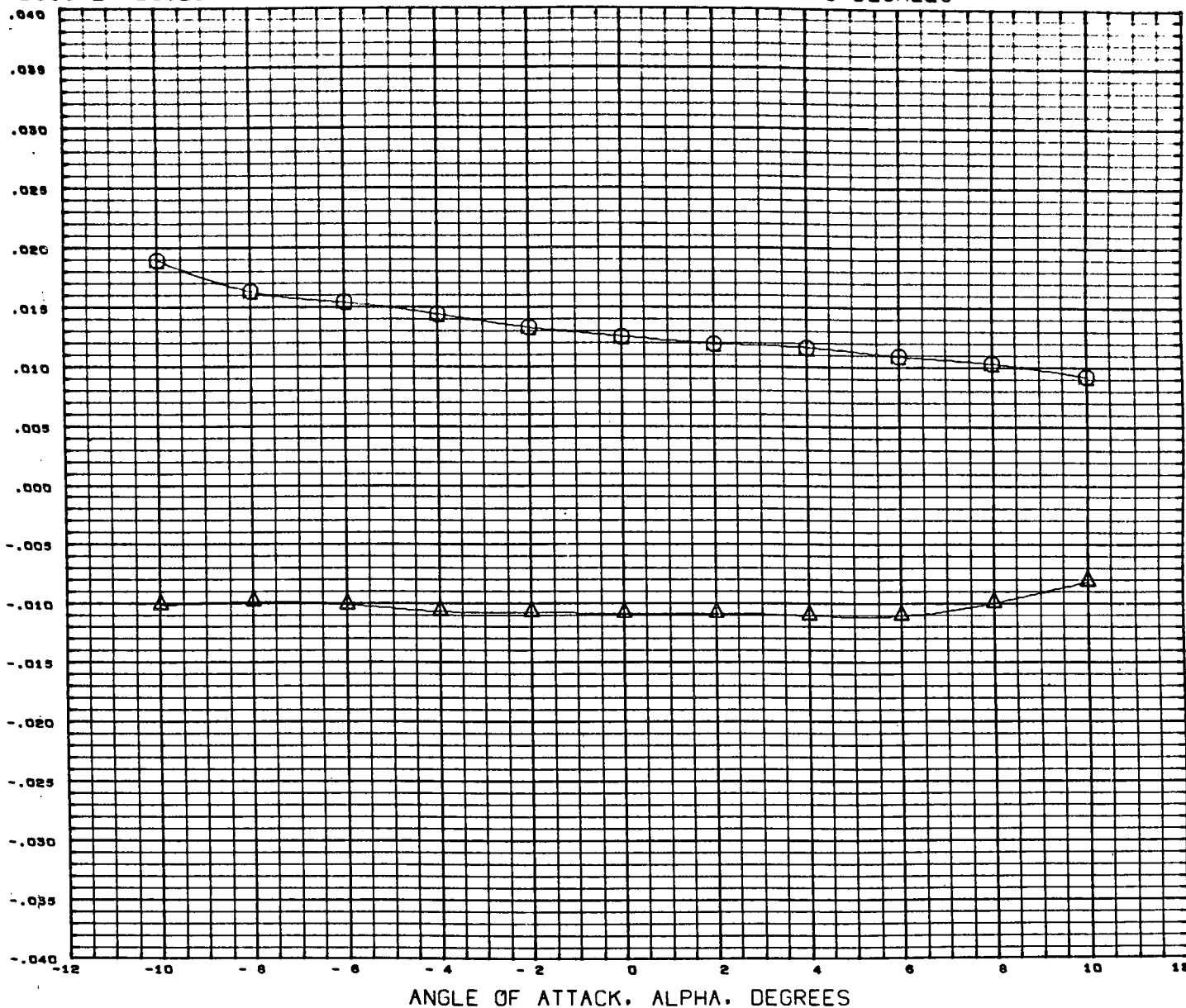


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------|--------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 | SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 | INCHES |
| | | | | | | BREF | 6.0990 | INCHES |
| | | | | | | XMRF | 0.0000 | |
| | | | | | | YMRF | 0.0000 | |
| | | | | | | ZMRF | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 1.460

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

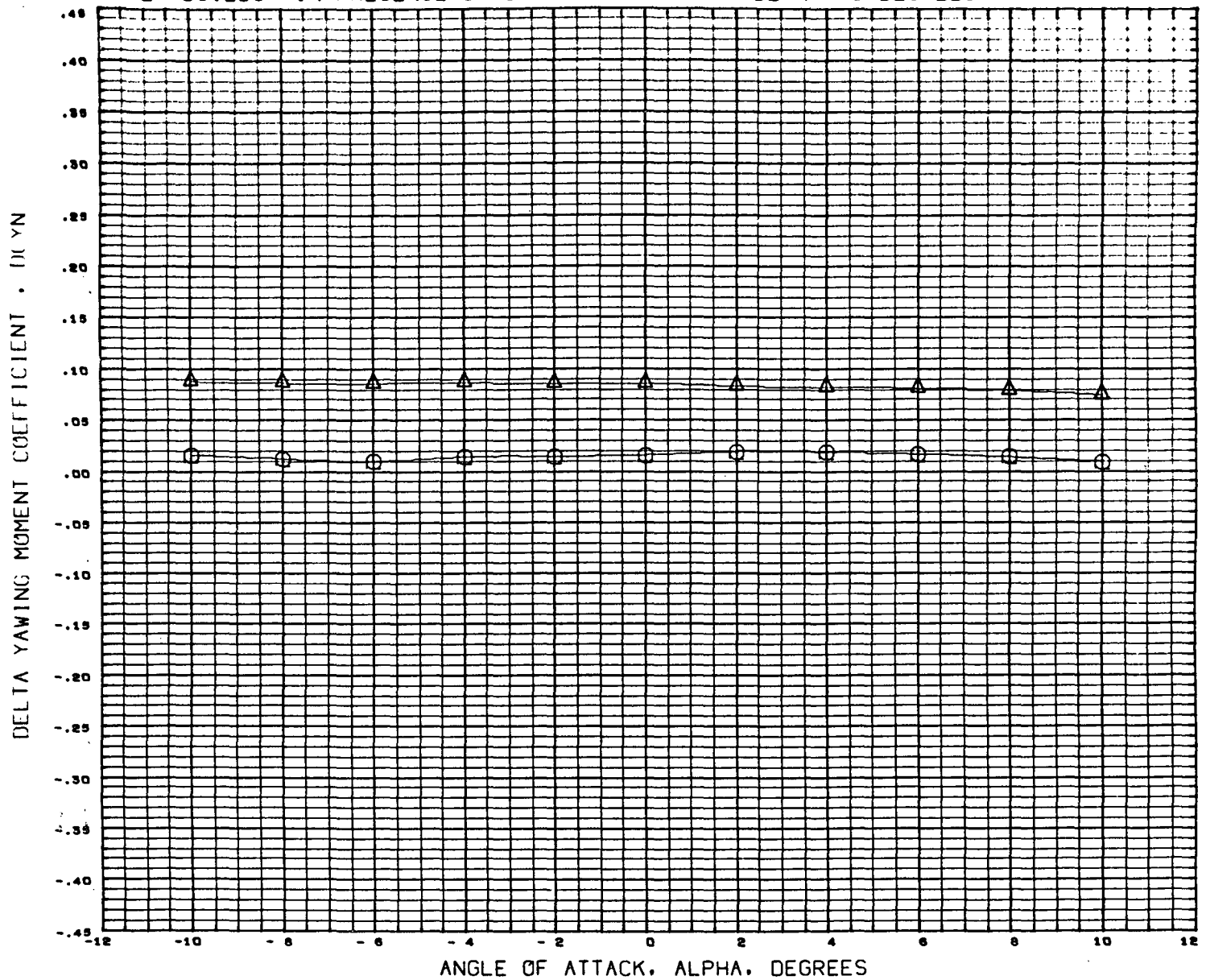
DELTA ROLLING MOMENT COEFFICIENT - DCBL



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
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| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

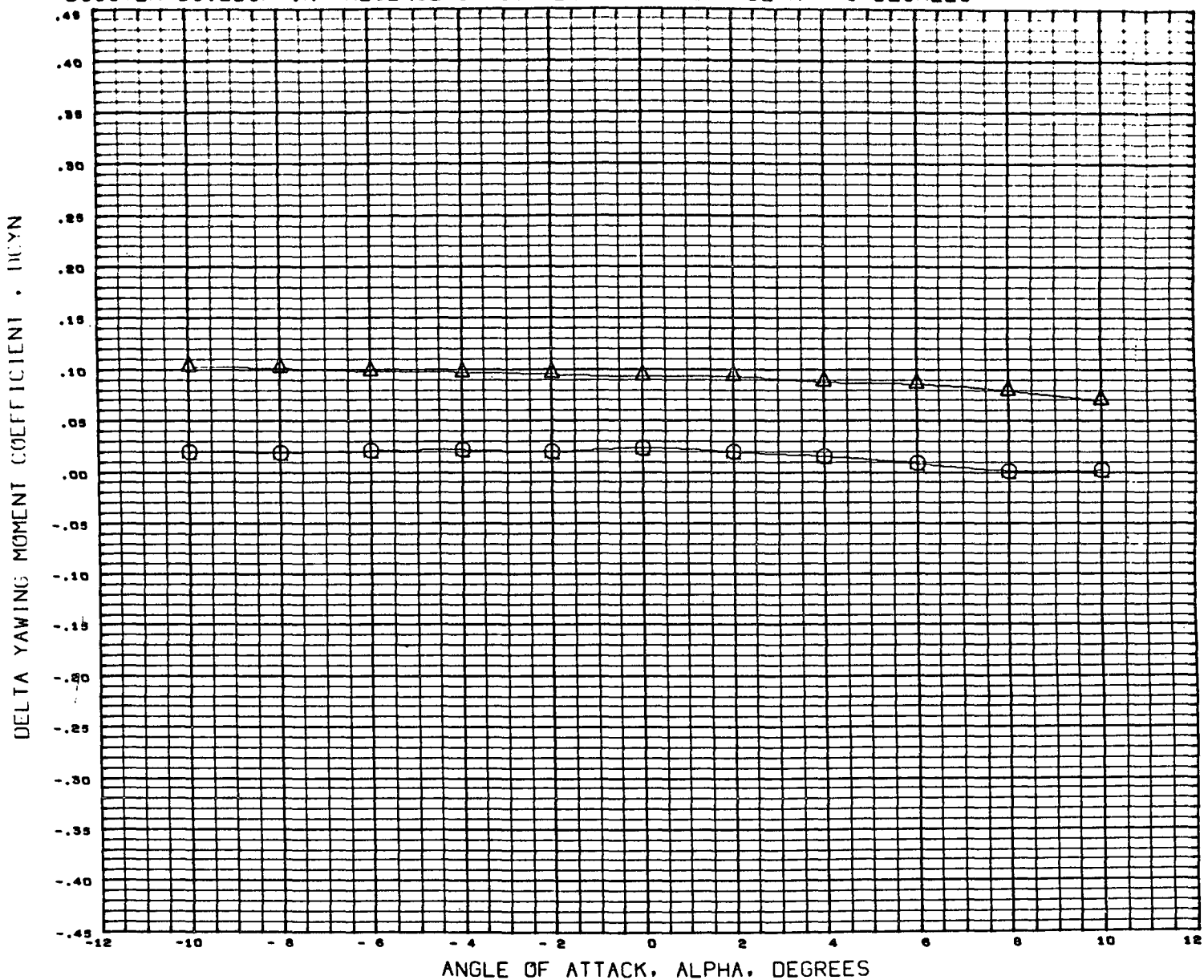
BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

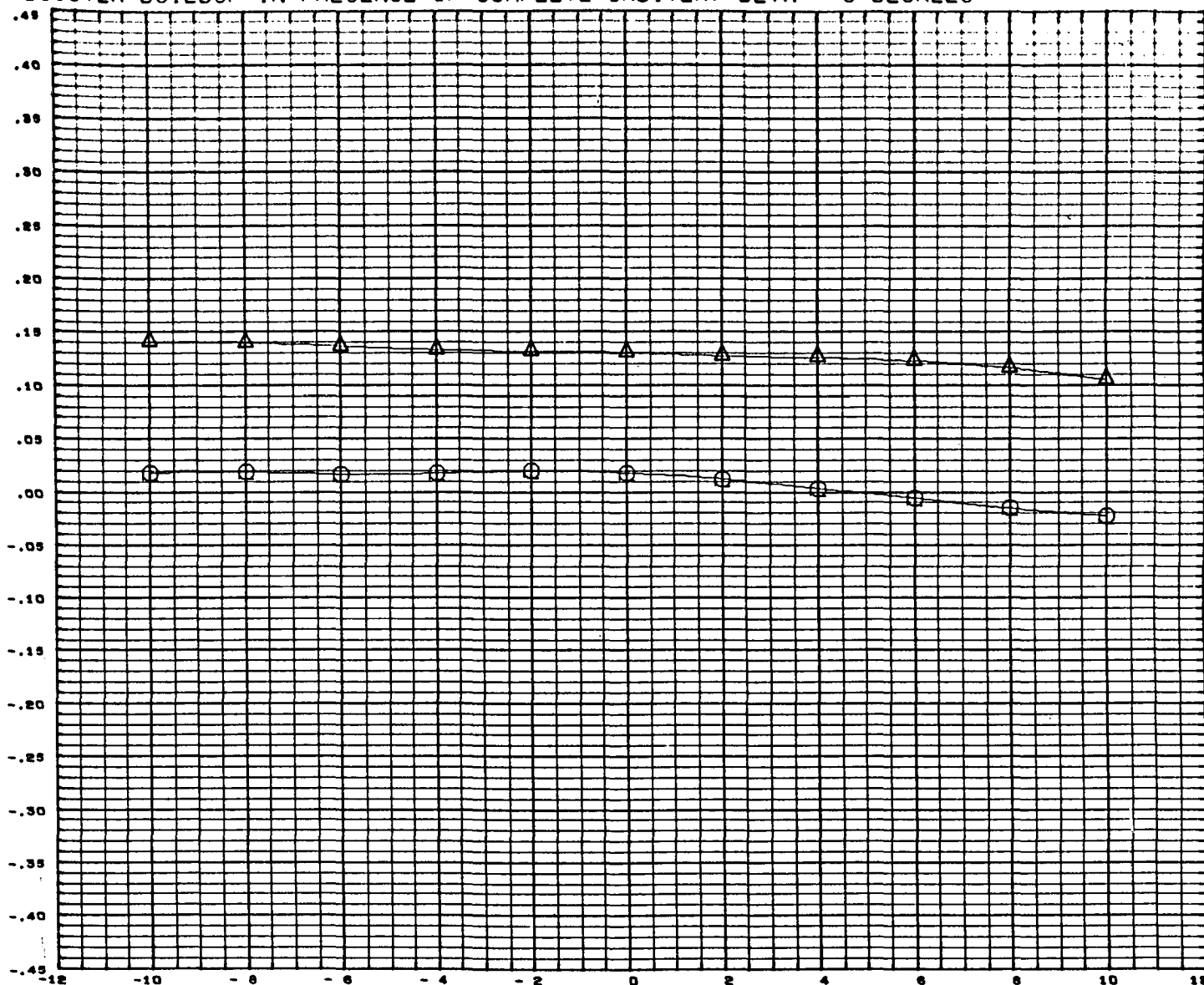


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | - | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

DELTA YAWING MOMENT COEFFICIENT, DCYN



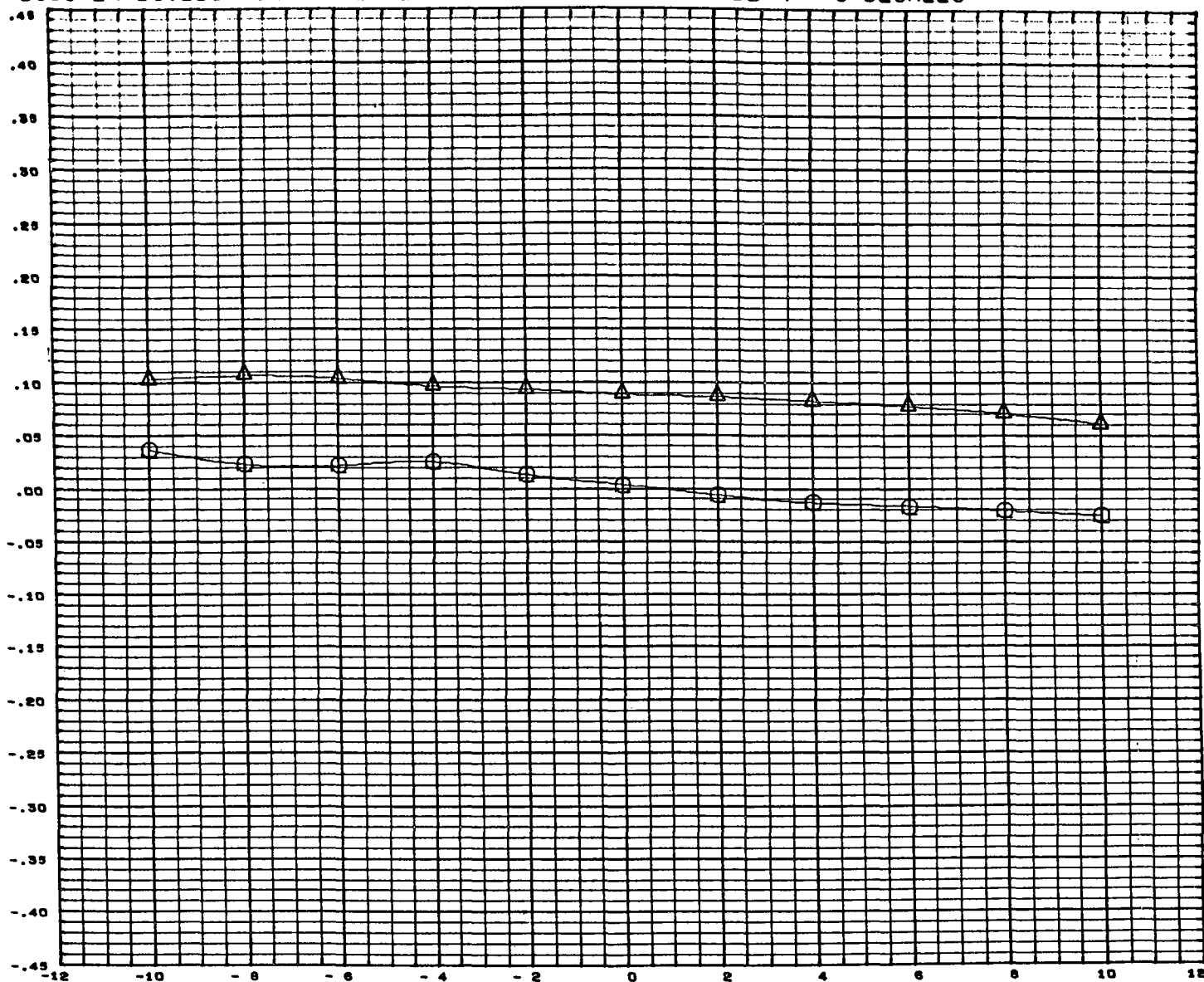
ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0039 SCALE |

MACH 1.100

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

DELTA YAWING MOMENT COEFFICIENT, DCYN



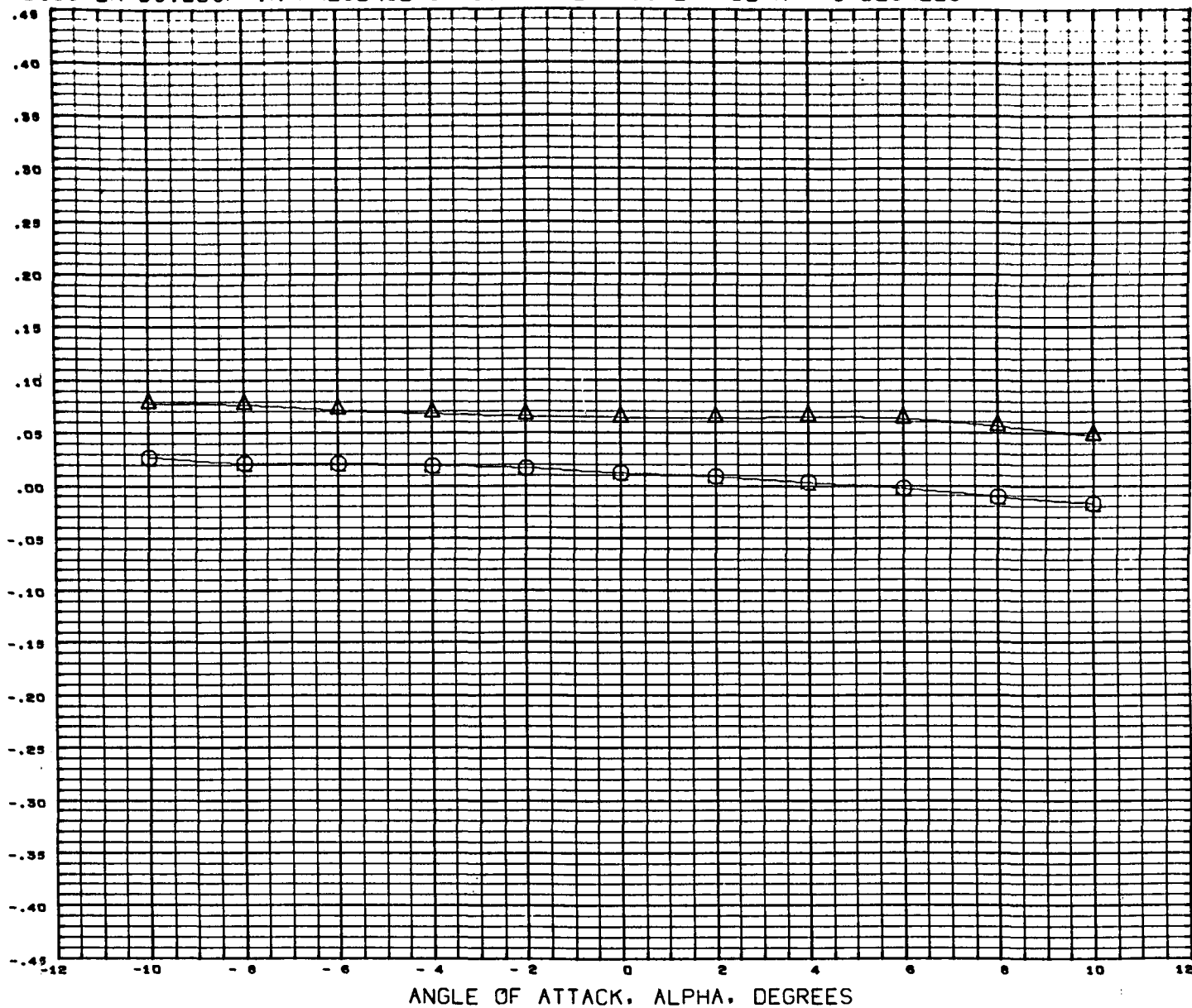
ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17)-(B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
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MACH 1.460

BOOSTER BUILDUP IN PRESENCE OF COMPLETE ORBITER, BETA = 6 DEGREES

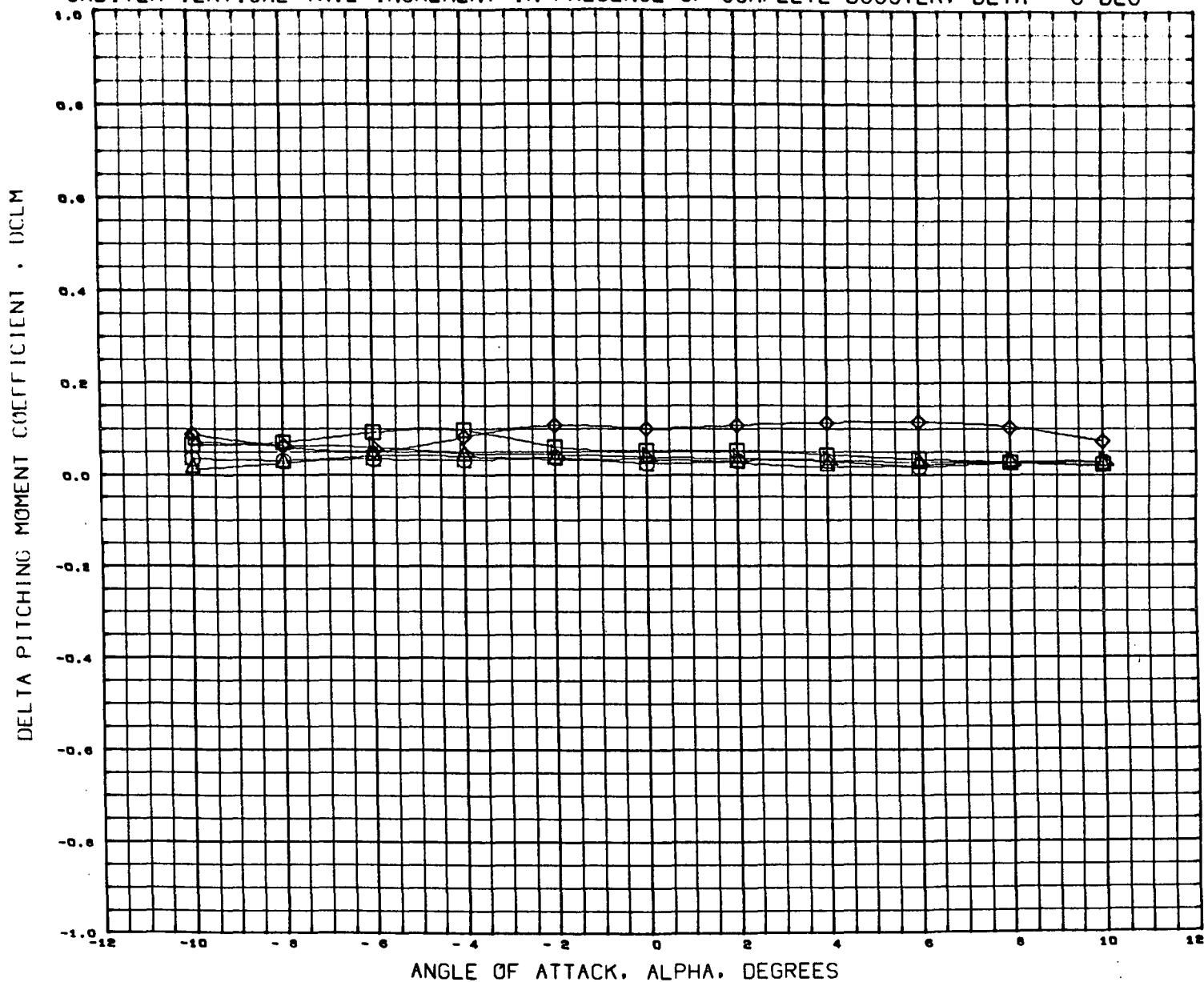
DELTA YAWING MOMENT COEFFICIENT - DCYN



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVATR | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (A32219) | 19A-20A (B20C4BW14+B5W17V17) - (B20+B5W17V17) | 6.000 | | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (A32220) | 21A-19A B20C4BW14V8+B5W17V17-B20C4BW14+B5W17V17 | 6.000 | 0.000 | 0.000 | 1.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.960

ORBITER VERTICAL TAIL INCREMENT IN PRESENCE OF COMPLETE BOOSTER, BETA = 6 DEG

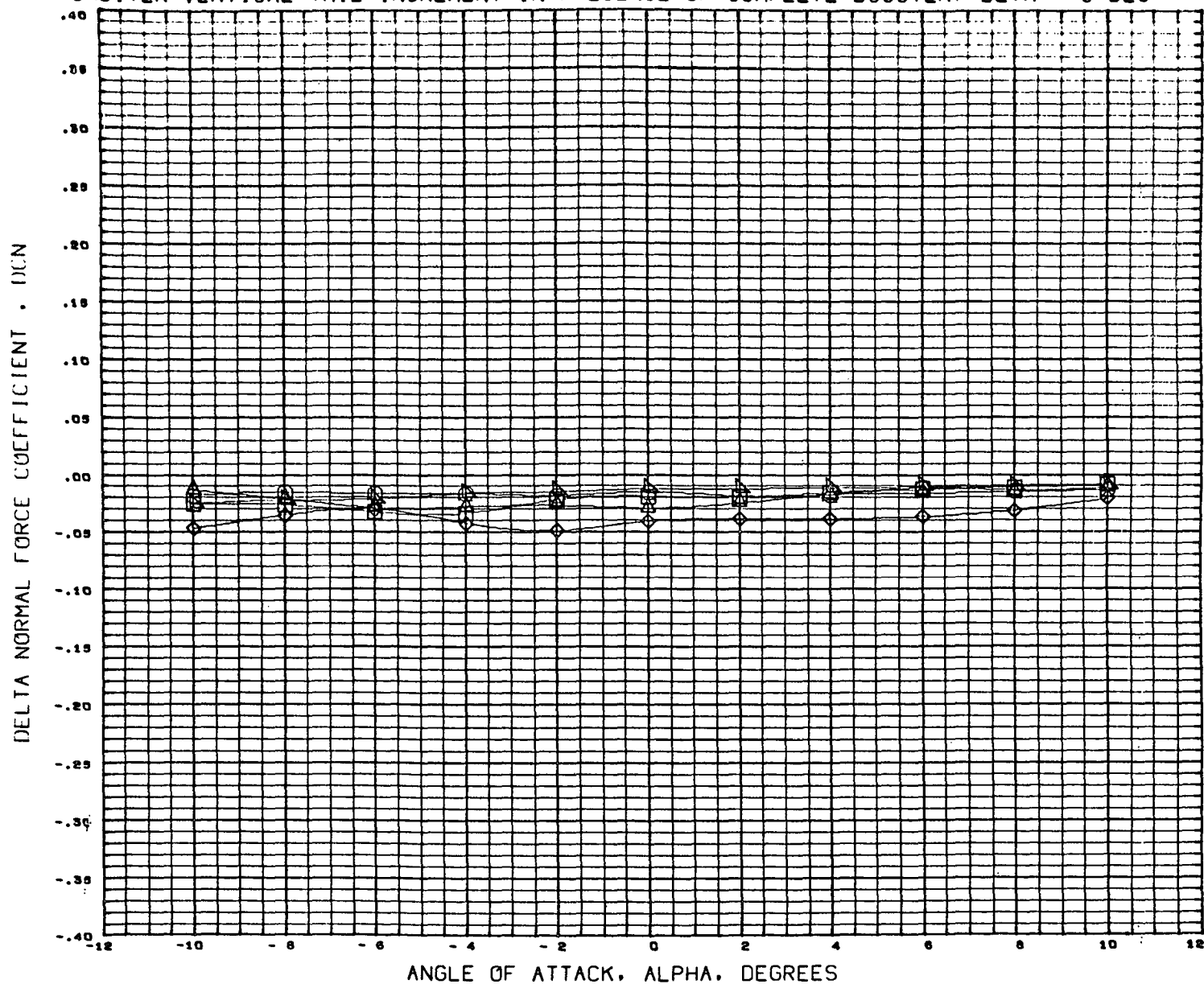


| SYMBOL | MACH | PARAMETRIC VALUES | | | |
|--------|-------|-------------------|-------|--------|-------|
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| ◇ | 0.900 | ORBINC | 0.000 | ELVORB | 0.000 |
| ◇ | 1.100 | ELVATR | 0.000 | AILRON | 0.000 |
| ◇ | 1.400 | CANARD | 0.000 | | |
| ◇ | 1.960 | | | | |

DATA HIST. CODE MVI&C

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ORBITER VERTICAL TAIL INCREMENT IN PRESENCE OF COMPLETE BOOSTER, BETA = 6 DEG

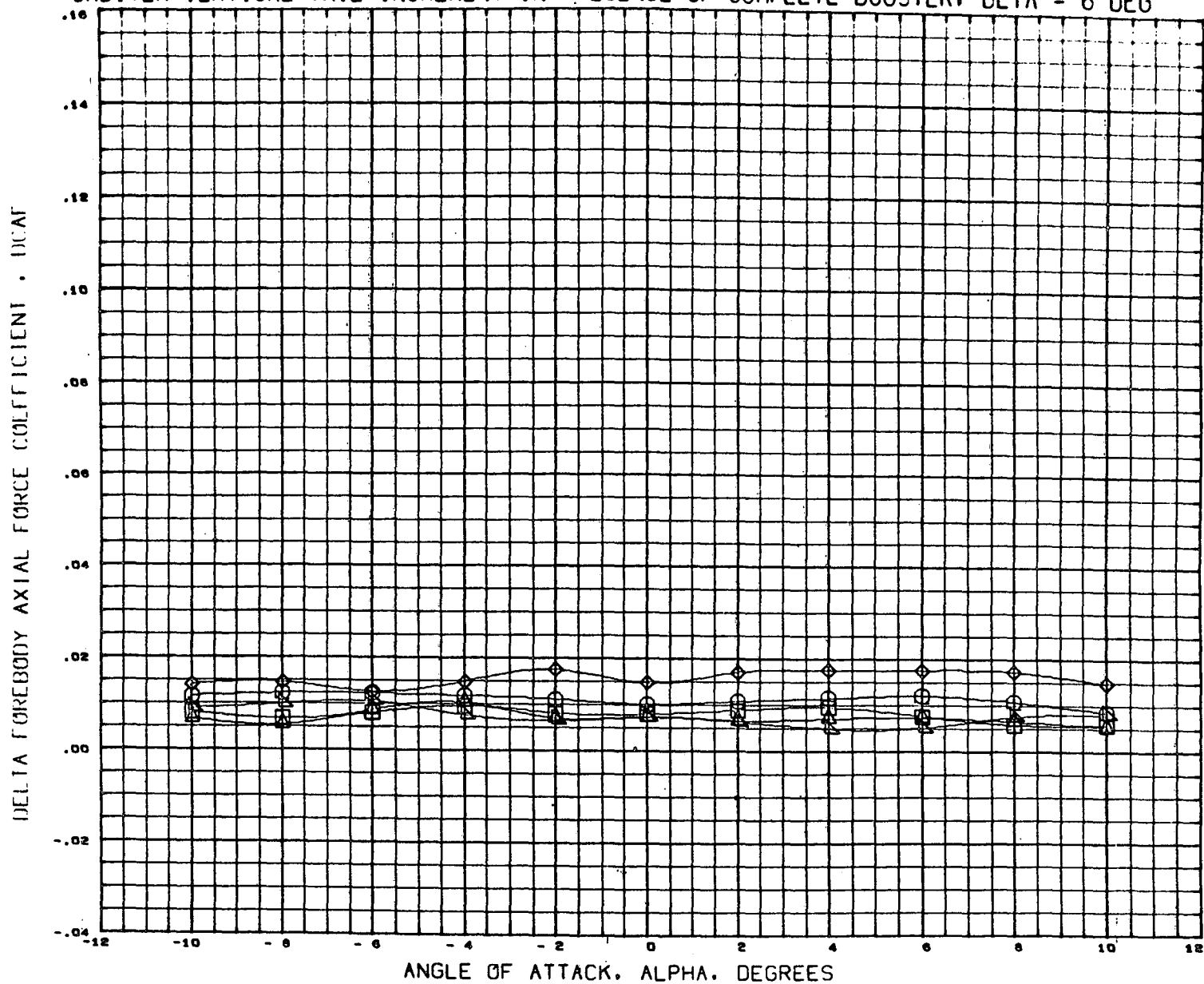


| SYMBOL | MACH | PARAMETRIC VALUES | | | |
|--------|-------|-------------------|-------|--------|-------|
| ○ | 0.600 | BETA | 6.000 | POSITN | 1.000 |
| △ | 0.900 | ORBINC | 0.000 | ELVORB | 0.000 |
| □ | 1.100 | ELVATR | 0.000 | AILRON | 0.000 |
| ◇ | 1.460 | CANARD | 0.000 | | |
| × | 1.980 | | | | |

DATA HIST. CODE MVI&C

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0039 | SCALE |

ORBITER VERTICAL TAIL INCREMENT IN PRESENCE OF COMPLETE BOOSTER, BETA = 6 DEG



| SYMBOL | MACH | PARAMETRIC VALUES | | | | REFERENCE INFORMATION | | |
|--------|-------|-------------------|-------|--------|-------|-----------------------|---------|--------|
| ○ | 0.600 | BETA | 6.000 | POSITN | 1.000 | SREF | 15.6560 | SQ IN |
| △ | 0.900 | ORBINC | 0.000 | ELVORB | 0.000 | LREF | 3.0990 | INCHES |
| ◇ | 1.100 | ELVATR | 0.000 | AILRON | 0.000 | BREF | 6.0990 | INCHES |
| □ | 1.460 | CANARD | 0.000 | | | XMRP | 0.0000 | |
| ◇ | 1.960 | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

DATA HIST. CODE MVI* C

ORBITER VERTICAL TAIL INCREMENT IN PRESENCE OF COMPLETE BOOSTER, BETA = 6 DEG

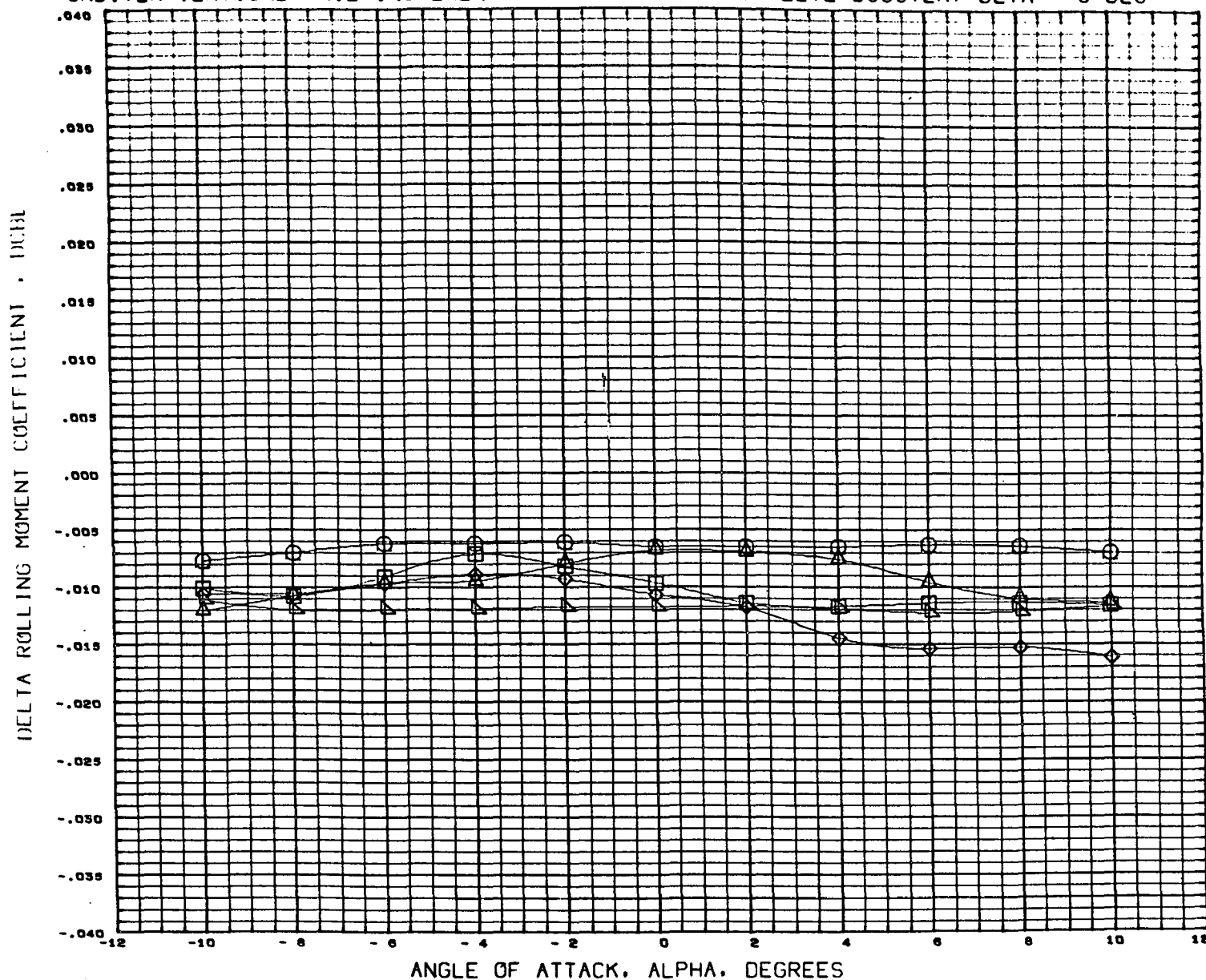


| SYMBOL | MACH | PARAMETRIC VALUES | | | |
|--------|-------|-------------------|-------|--------|-------|
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| △ | 0.900 | ORBINC | 0.000 | ELVORB | 0.000 |
| ◇ | 1.100 | ELVATR | 0.000 | AILRON | 0.000 |
| □ | 1.460 | CANARD | 0.000 | | |
| ▽ | 1.960 | | | | |

DATA HIST. CODE MVI+C

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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ORBITER VERTICAL TAIL INCREMENT IN PRESENCE OF COMPLETE BOOSTER, BETA = 6 DEG

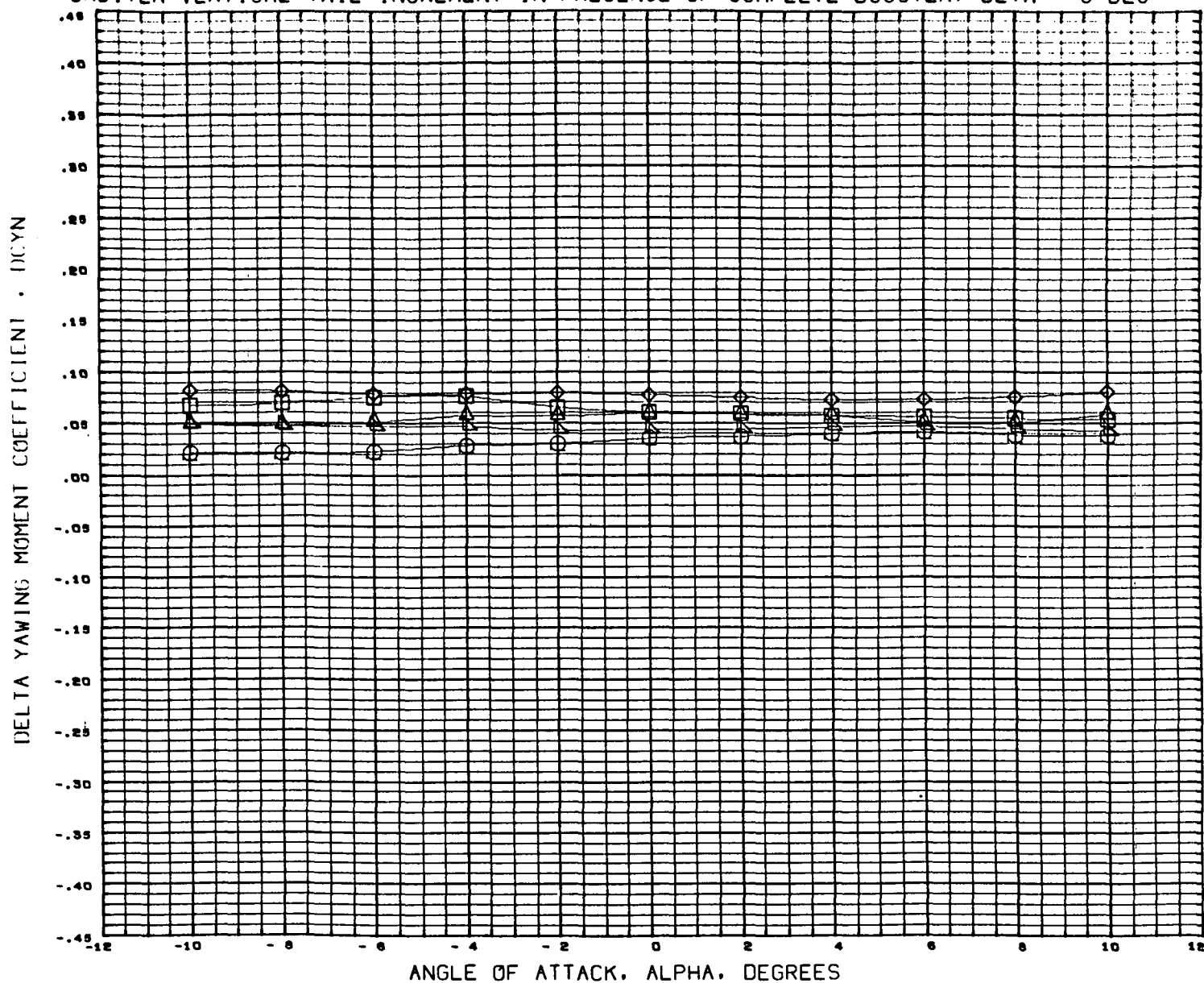


| SYMBOL | MACH | PARAMETRIC VALUES | | | |
|--------|-------|-------------------|-------|--------|-------|
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| △ | 0.900 | ORBINC | 0.000 | ELVOR8 | 0.000 |
| ◇ | 1.100 | ELVATR | 0.000 | AILRON | 0.000 |
| □ | 1.460 | CANARD | 0.000 | | |
| ◻ | 1.960 | | | | |

DATA HIST. CODE MVI#C

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6360 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ORBITER VERTICAL TAIL INCREMENT IN PRESENCE OF COMPLETE BOOSTER, BETA = 6 DEG

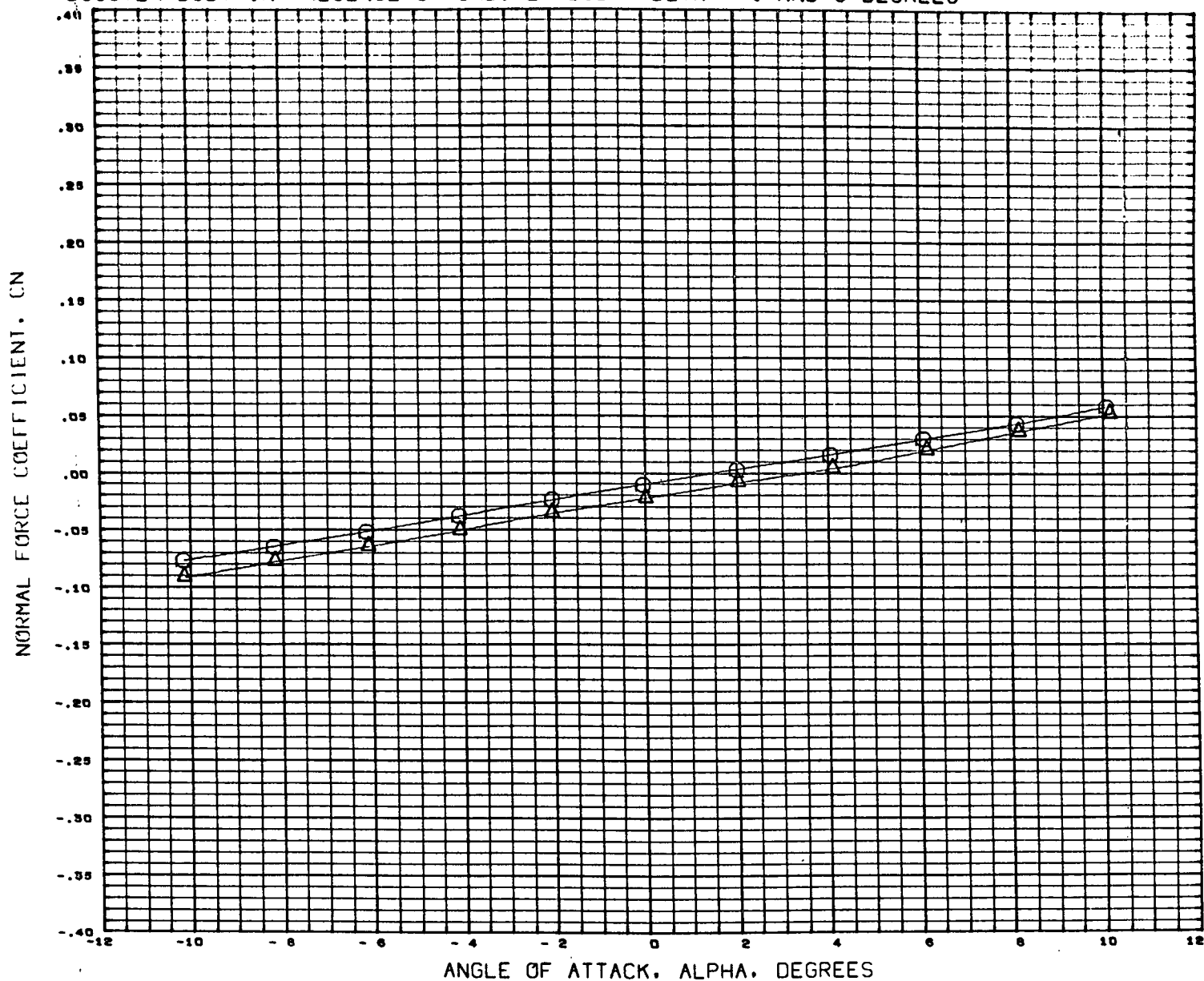


| SYMBOL | MACH | PARAMETRIC VALUES | | | |
|--------|-------|-------------------|-------|--------|-------|
| ○ | 0.600 | BETA | 6.000 | POSITN | 1.000 |
| △ | 0.900 | ORBINC | 0.000 | ELVORB | 0.000 |
| ◇ | 1.100 | ELVATR | 0.000 | AILRON | 0.000 |
| □ | 1.400 | CANARD | 0.000 | | |
| ⊠ | 1.960 | | | | |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREP | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

DATA HIST. CODE MVI+C

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



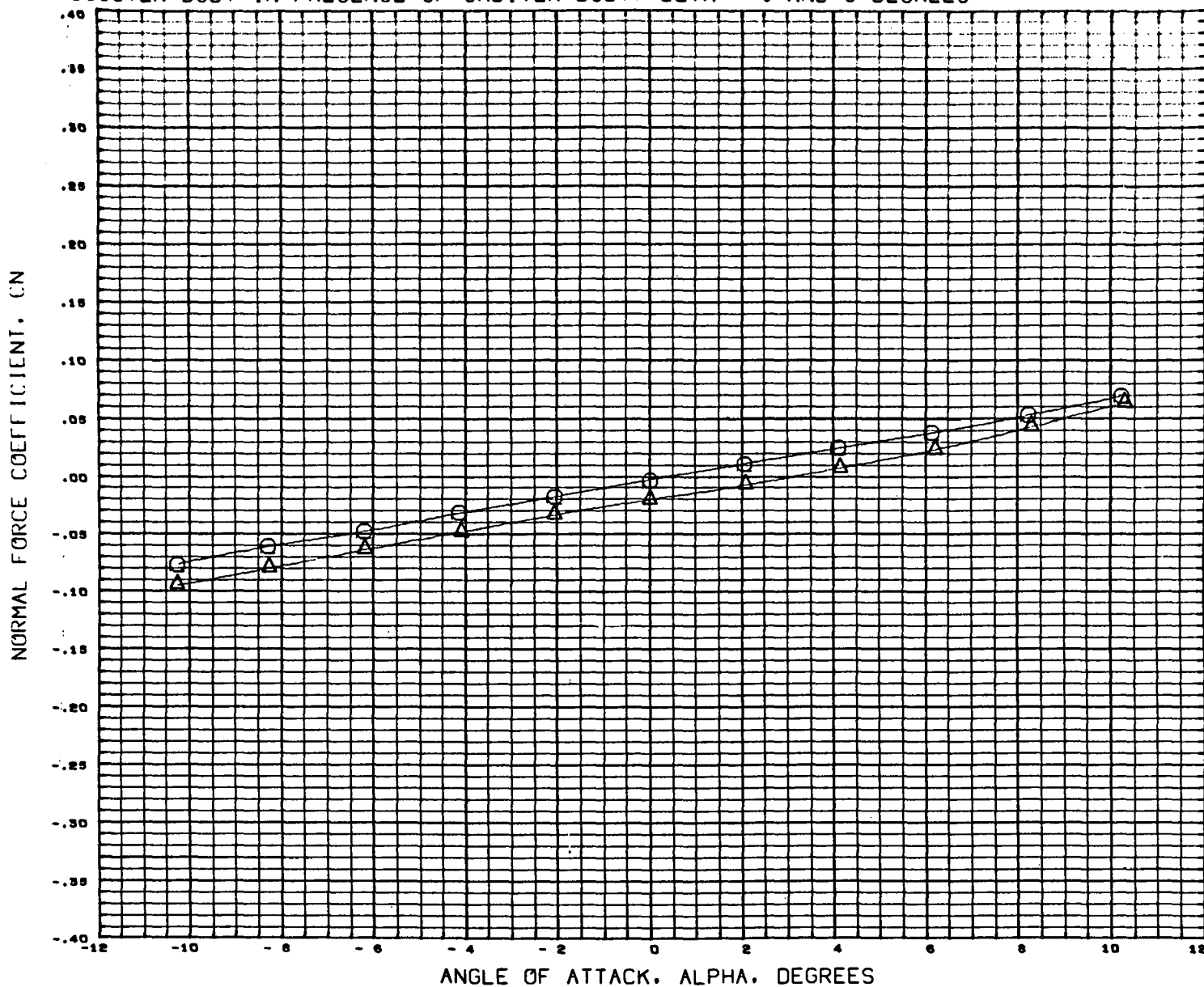
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------|
| (H3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3217A) | MSFC490 NR/GD LAUNCH B20+B5 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.999

BOOSTER BODY IN PRESENCE OF ORBITER BODY. BETA = 0 AND 6 DEGREES



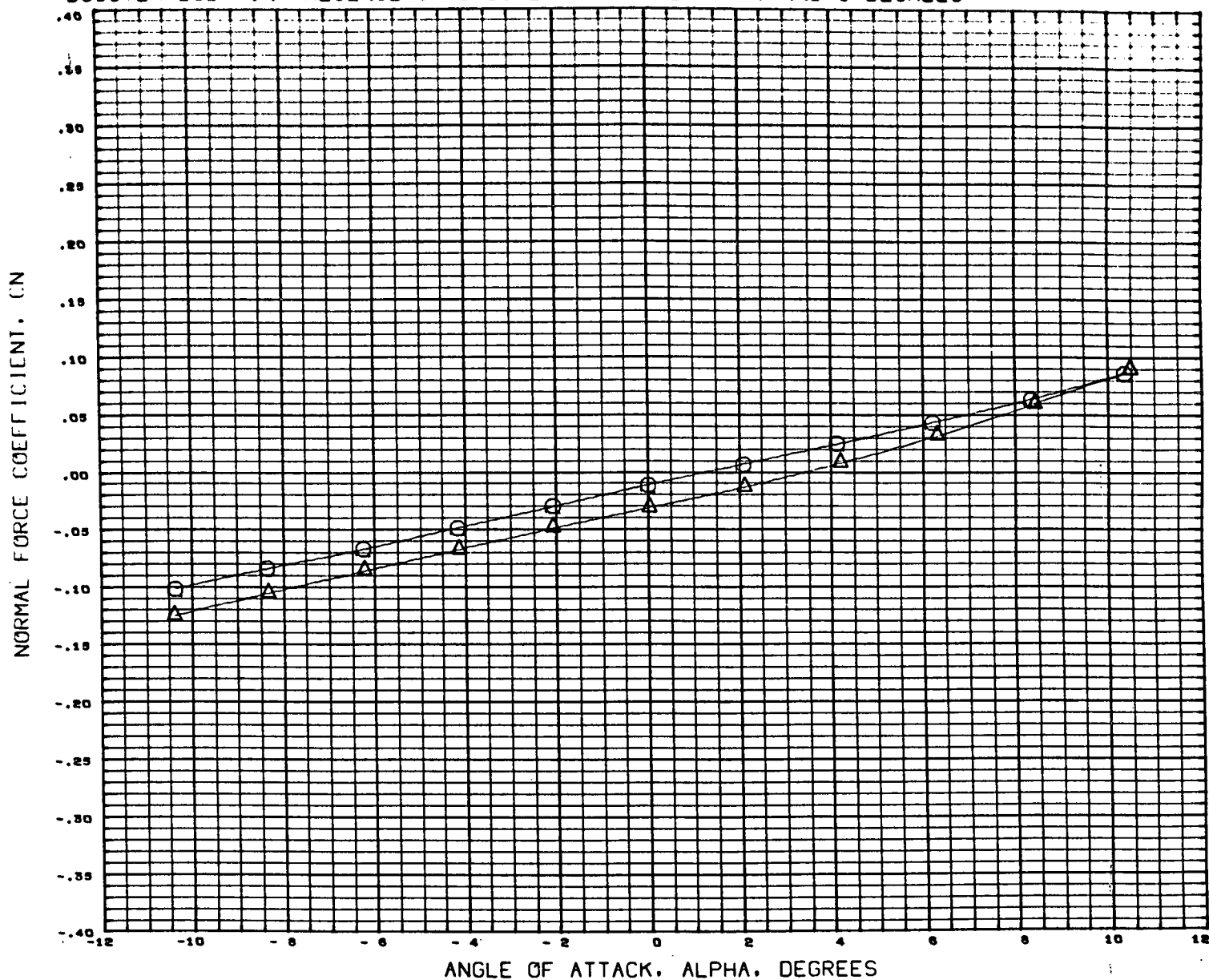
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 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.897

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



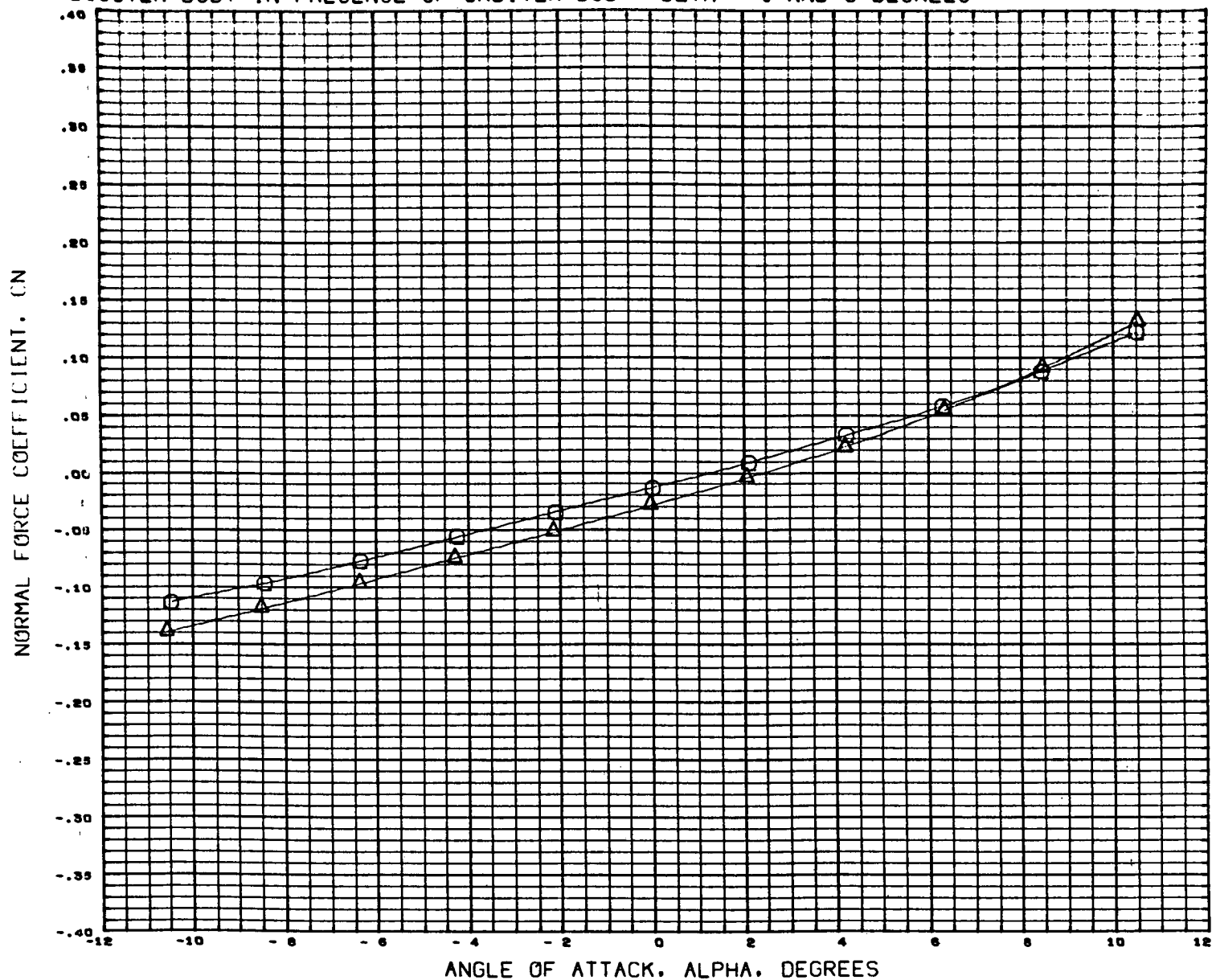
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3208A) MSFC490 NR/GD LAUNCH B20+B5
 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
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 BREF 6.0990 INCHES
 XMRP 0.0000
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 SCALE 0.0035 SCALE

MACH 1.096

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



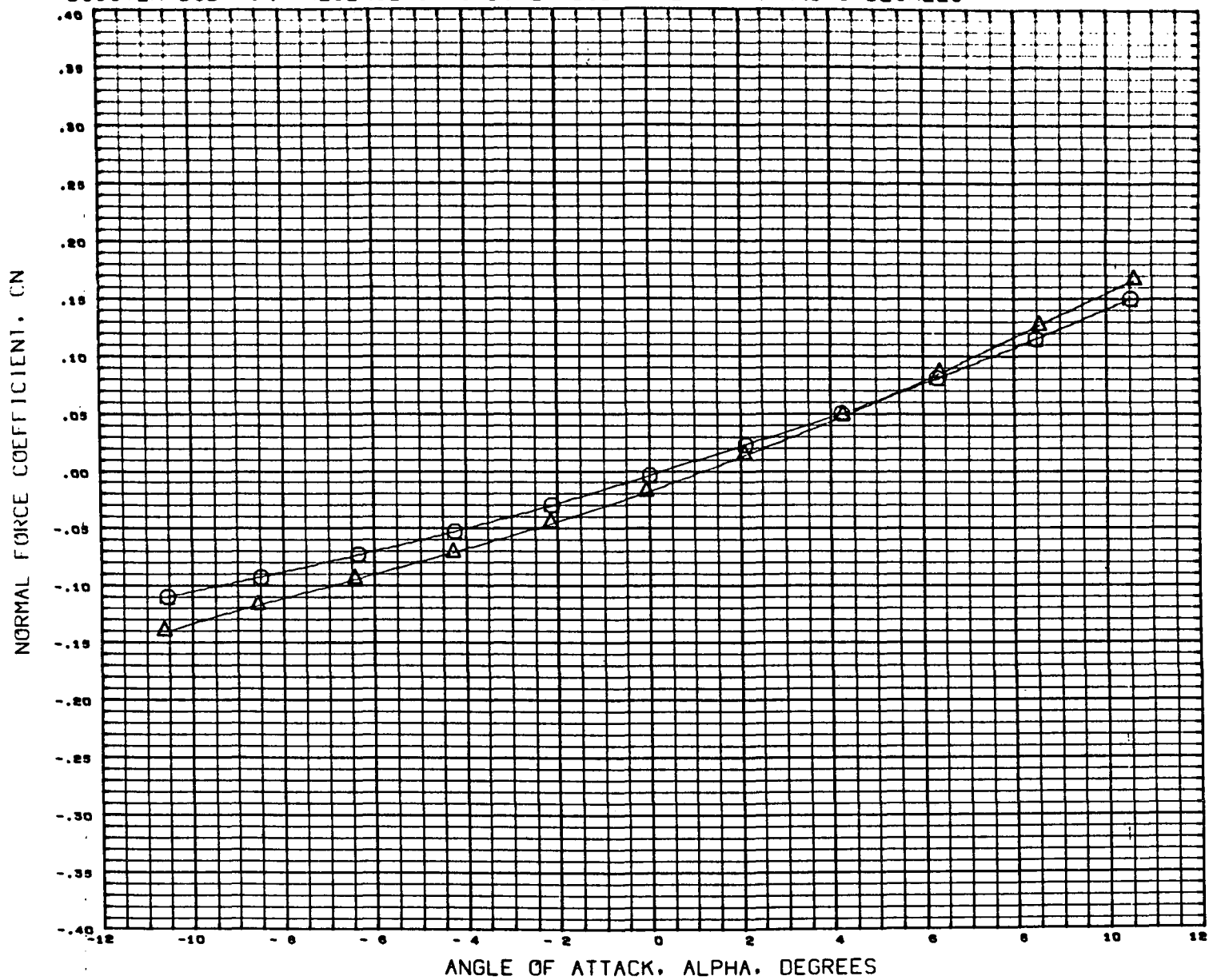
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------|
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| (H3217A) | MSFC490 NR/GD LAUNCH B20+B5 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
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| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.469

BOOSTER BODY IN PRESENCE OF ORBITER BODY. BETA = 0 AND 6 DEGREES



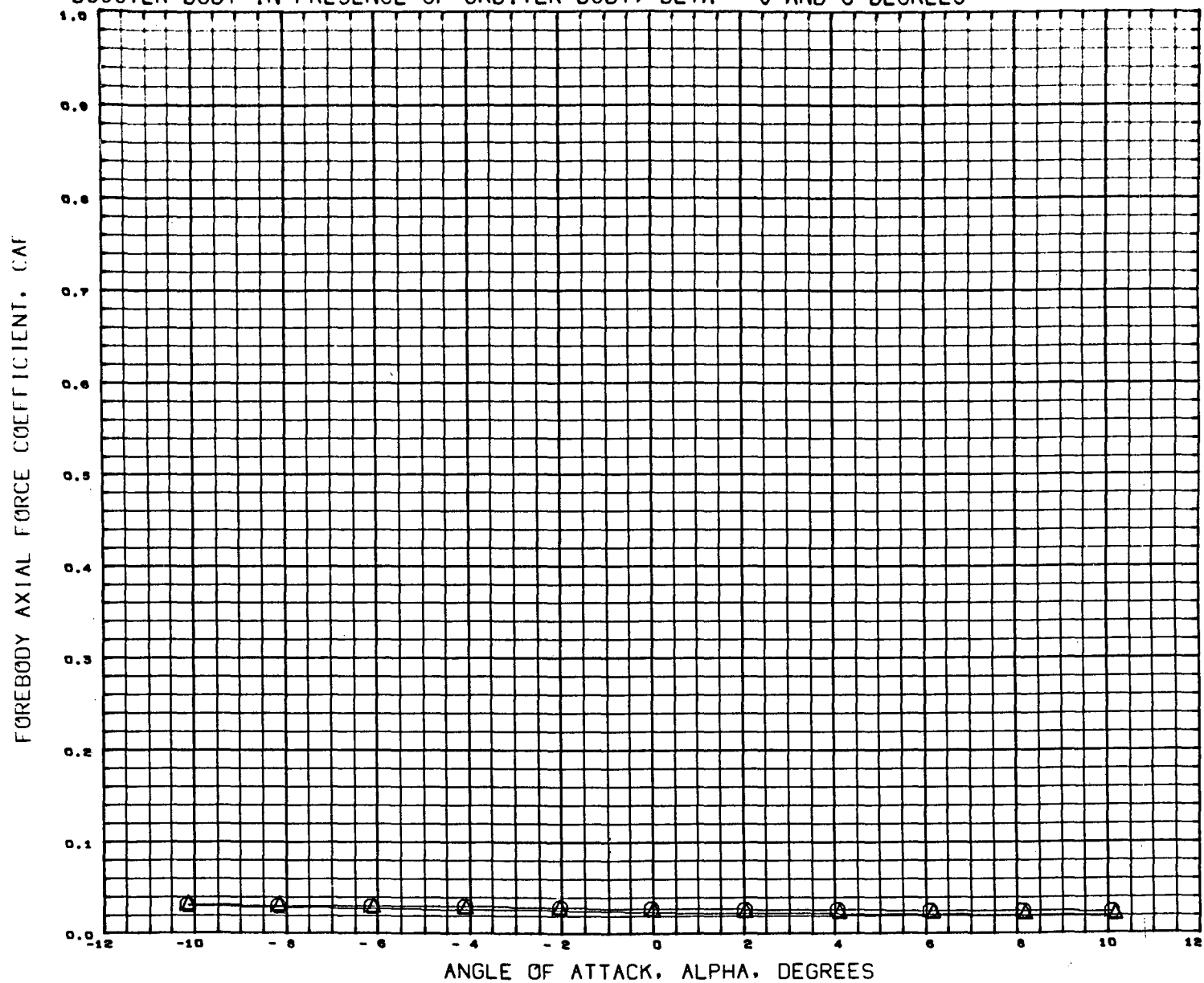
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.958

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



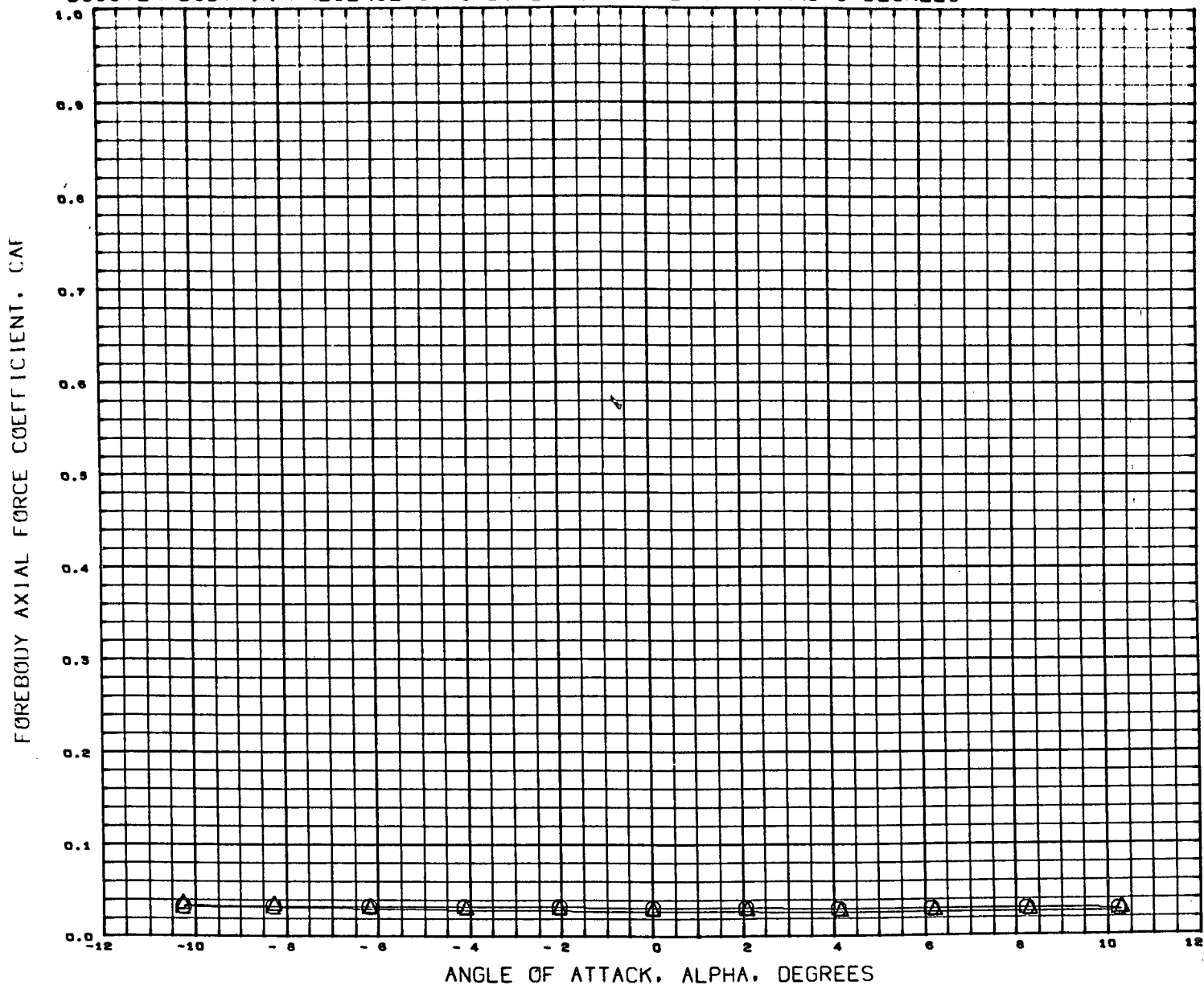
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 (H3217A) △ MSFC490 NR/GD LAUNCH B20+B5

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.999

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

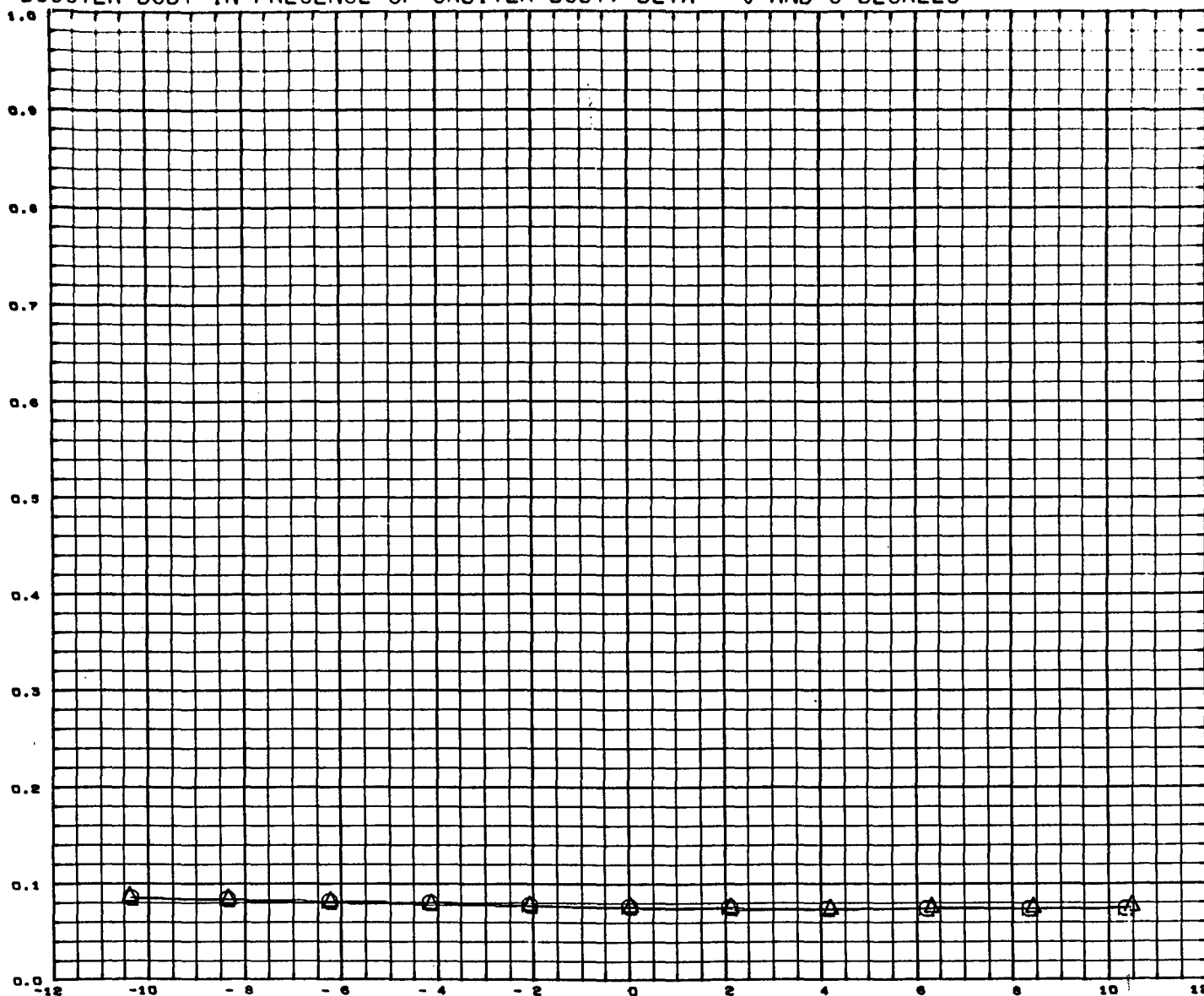
BETA POSITN ORBINC
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REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.897

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



ANGLE OF ATTACK, ALPHA, DEGREES

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------|
| (H3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (H3217A) | MSFC490 NR/GD LAUNCH B20+B5 |

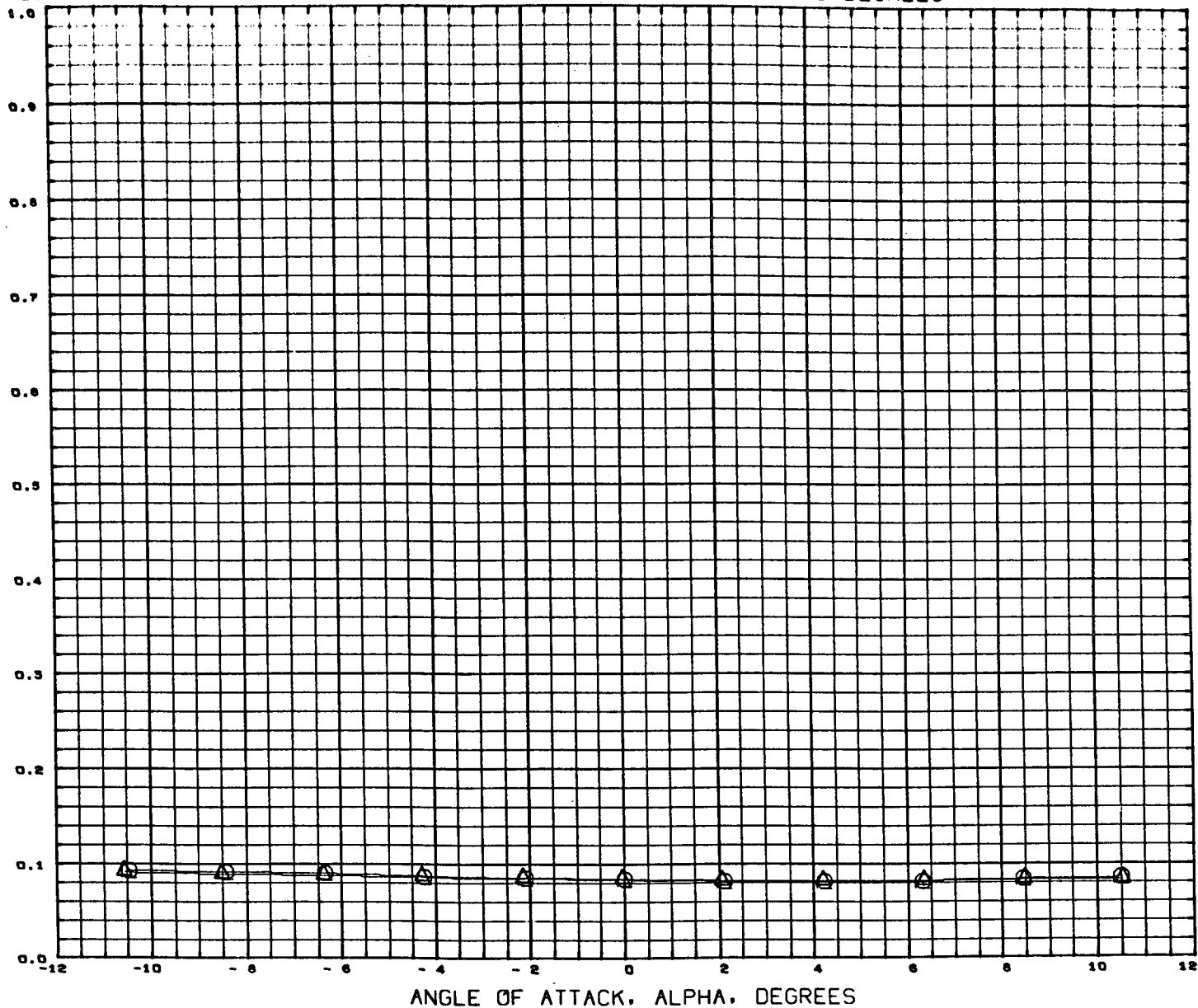
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
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| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES

FOREBODY AXIAL FORCE COEFFICIENT, CAI



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3208A) MSFC490 NR/GD LAUNCH B20+B5
 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

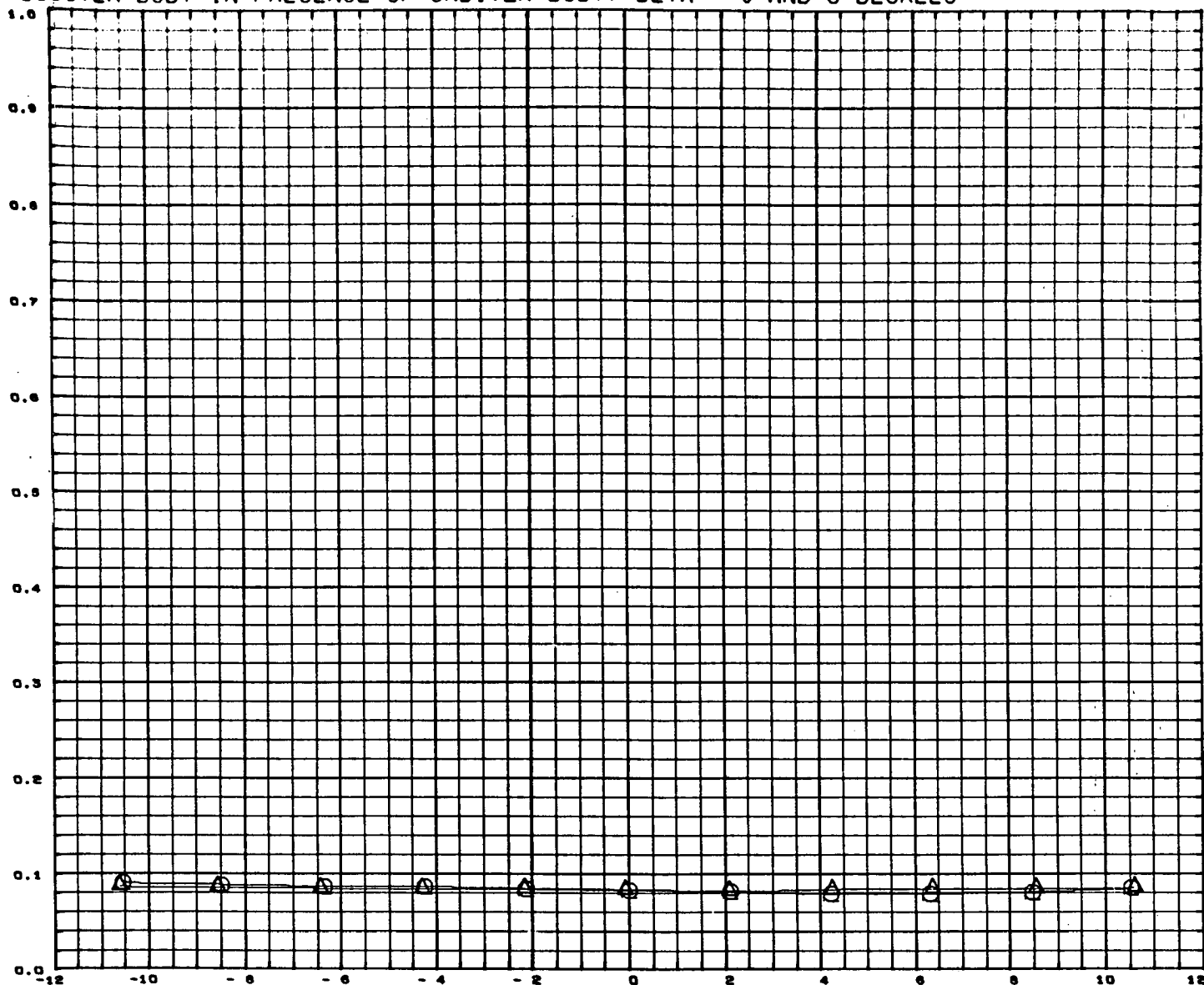
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |



MACH 1.469

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



ANGLE OF ATTACK, ALPHA, DEGREES

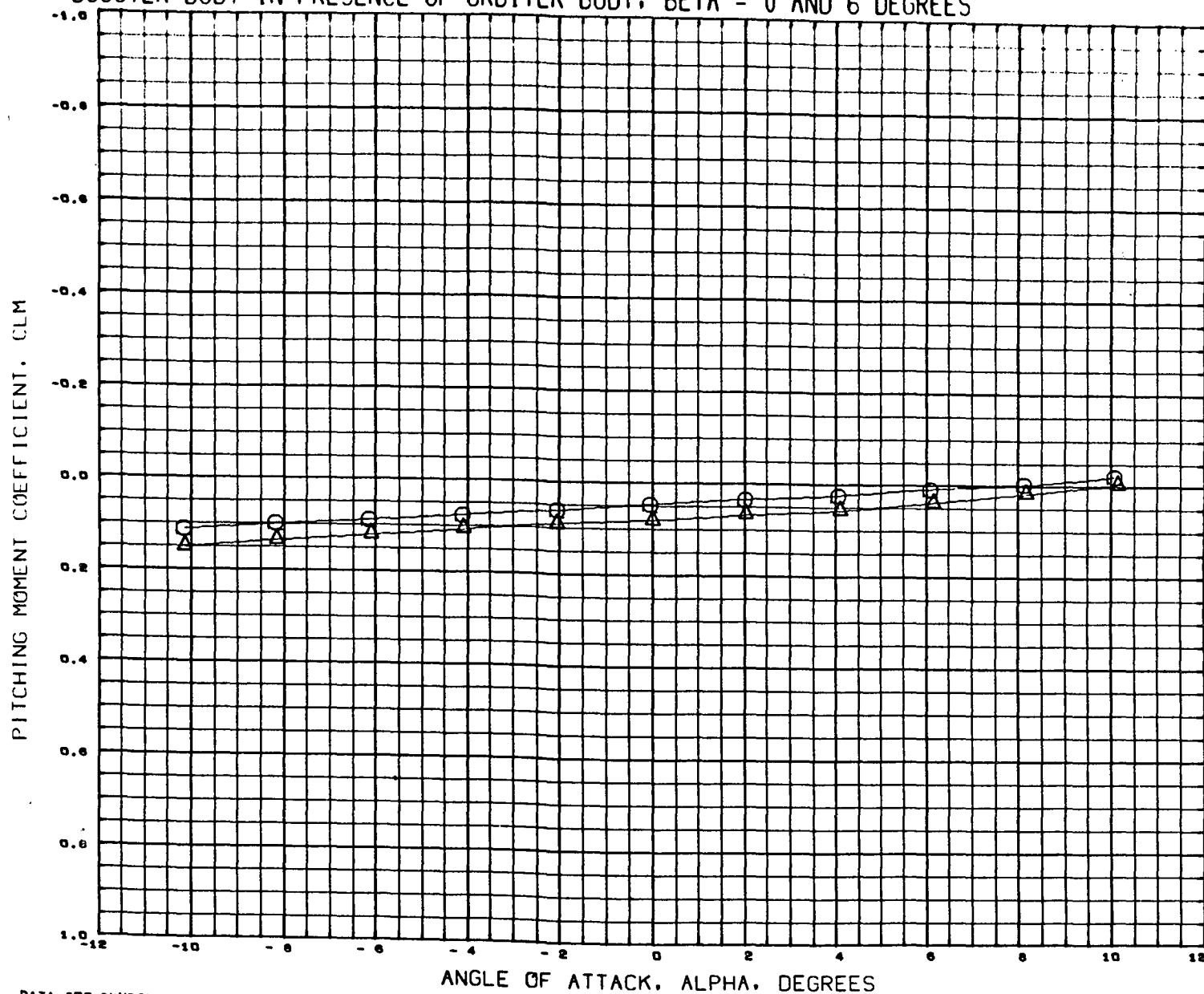
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|--|-----------------------------|
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
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| (H3217A)  | MSFC490 NR/GD LAUNCH B20+B3 |

| | | |
|-------|--------|--------|
| BETA | POSITN | ORBINC |
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| | | |
|-----------------------|---------|--------|
| REFERENCE INFORMATION | | |
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| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.958

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



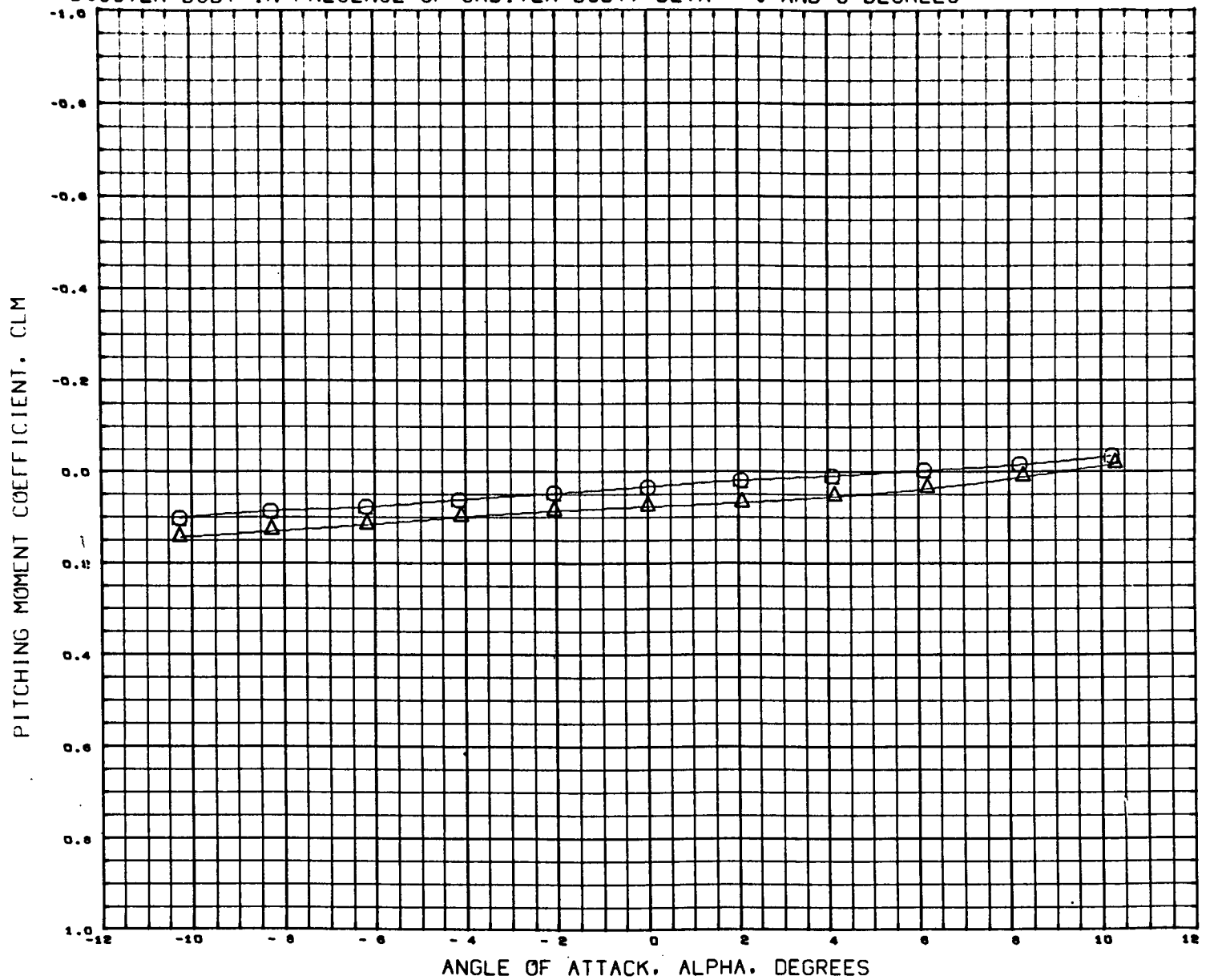
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.999

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



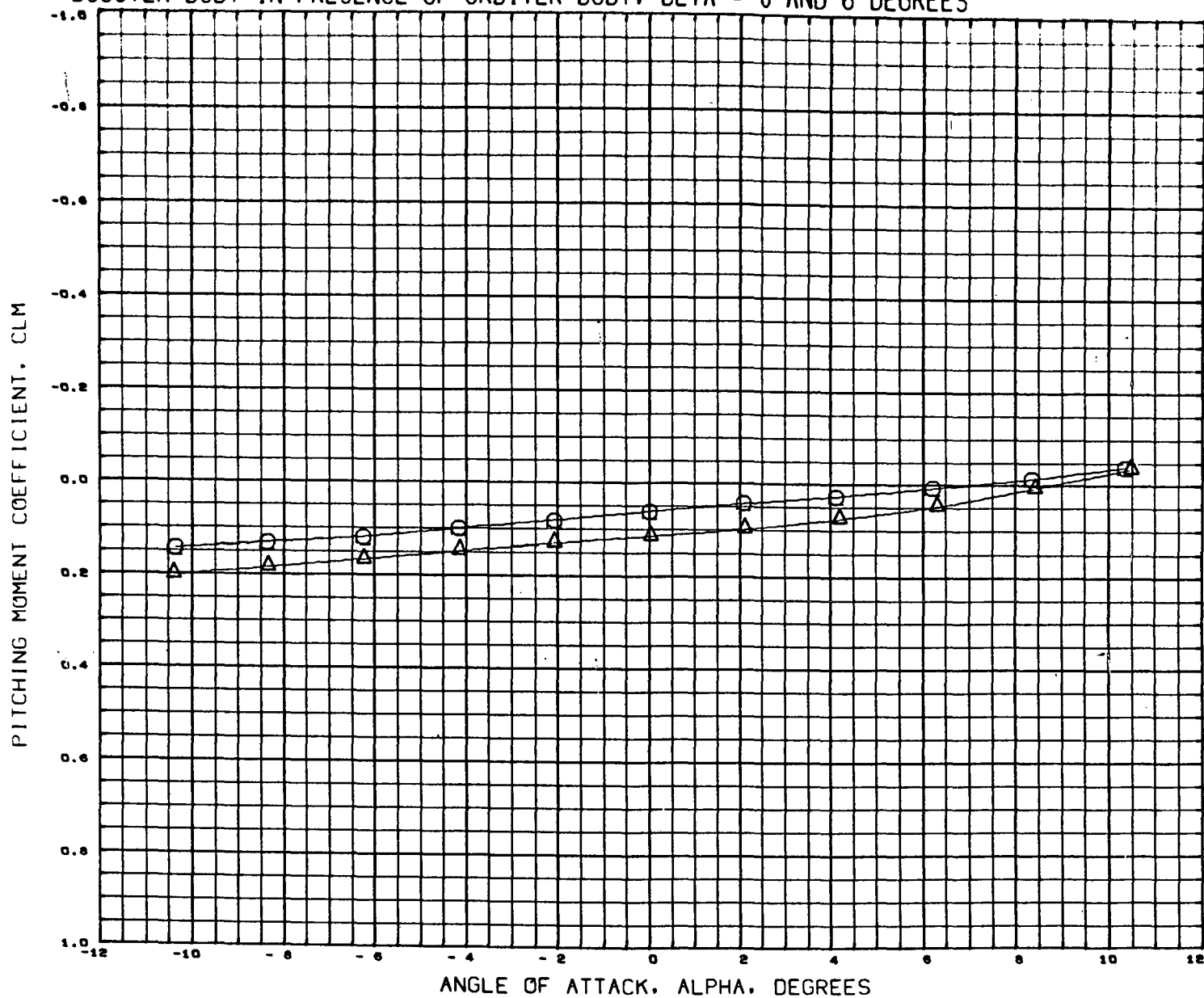
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 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 13.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRF 0.0000
 YMRF 0.0000
 ZMRF 0.0000
 SCALE 0.0035 SCALE

MACH 0.897

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



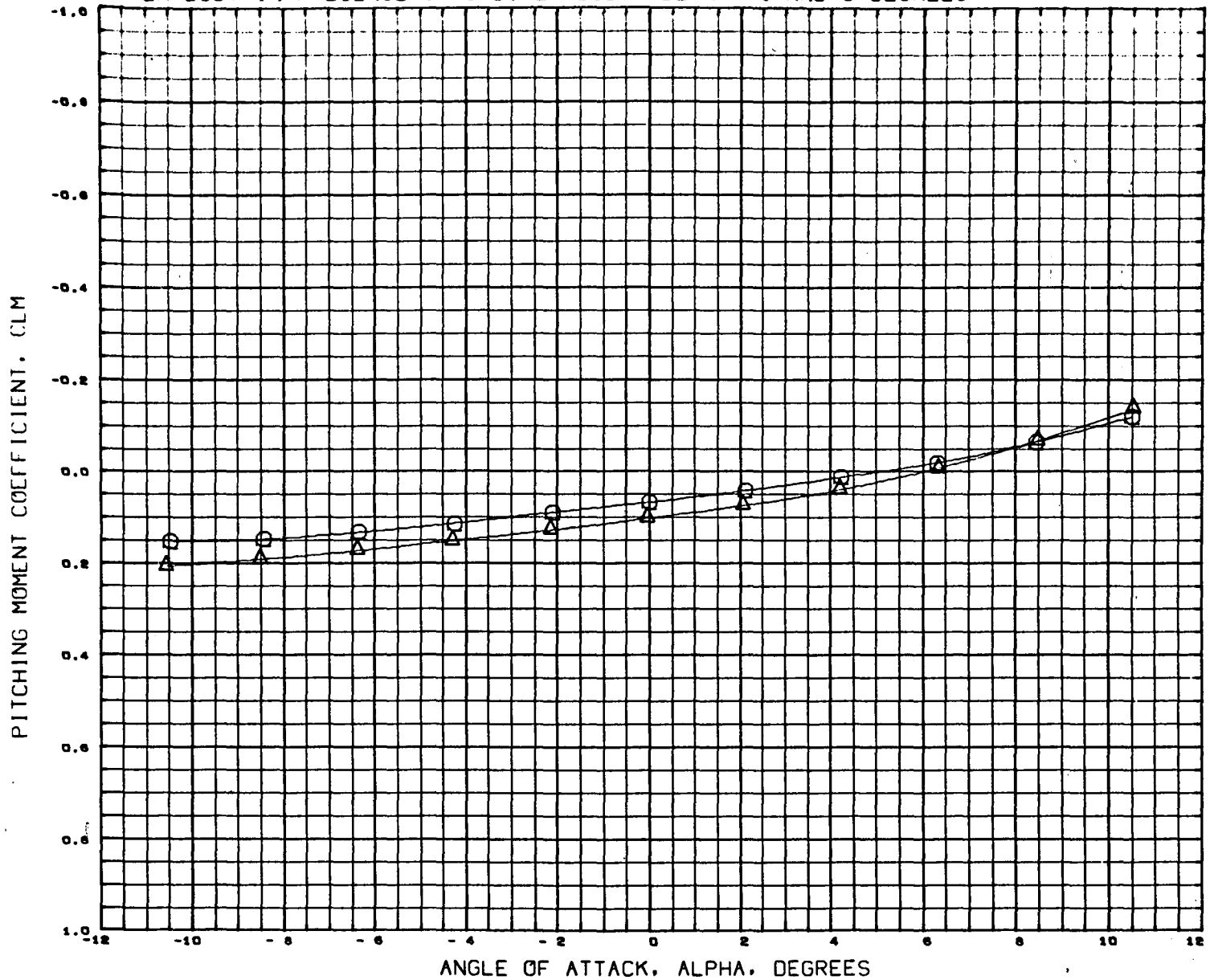
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 (H3217A) △ MSFC490 NR/GD LAUNCH 820+83

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 13.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.096

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



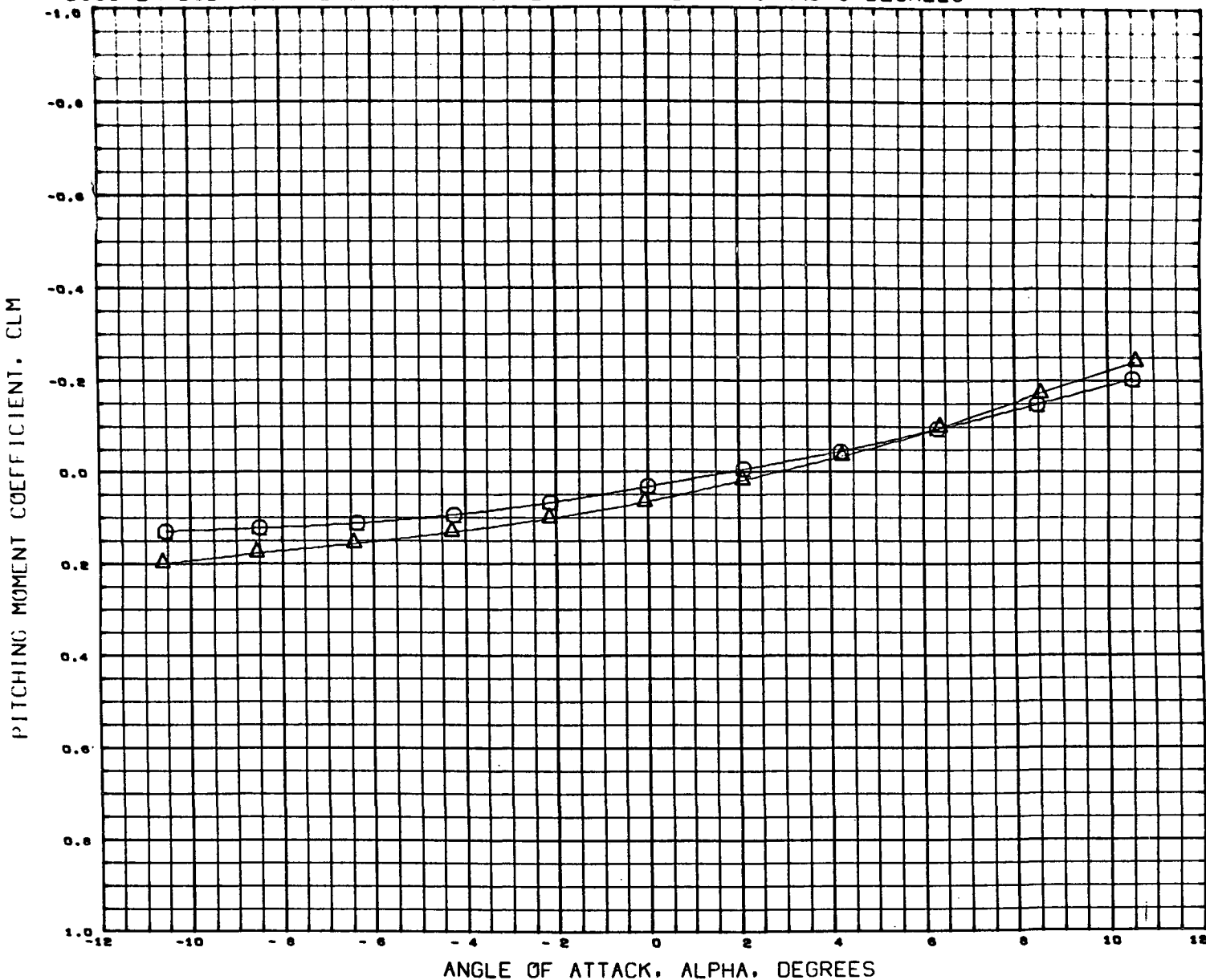
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BETA POSITN ORBINC
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 6.000 1.000 0.000

REFERENCE INFORMATION
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 BREF 6.0990 INCHES
 XMRP 0.0000
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 SCALE 0.0035 SCALE

MACH 1.469

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



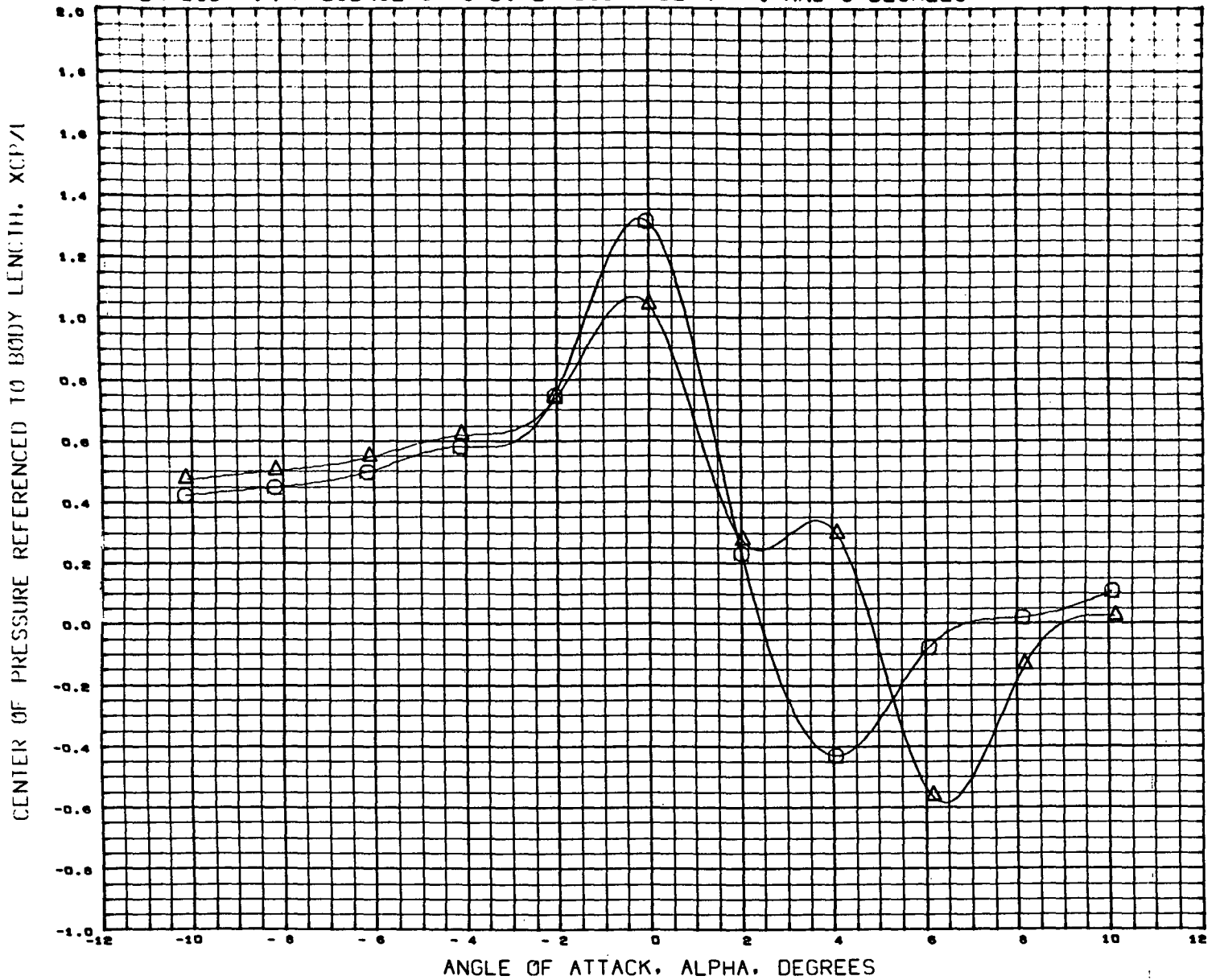
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BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0033 SCALE

MACH 1.938

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3206A) MSFC490 NR/GD LAUNCH B20+B3
 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 6.000 | 1.000 | 0.000 |

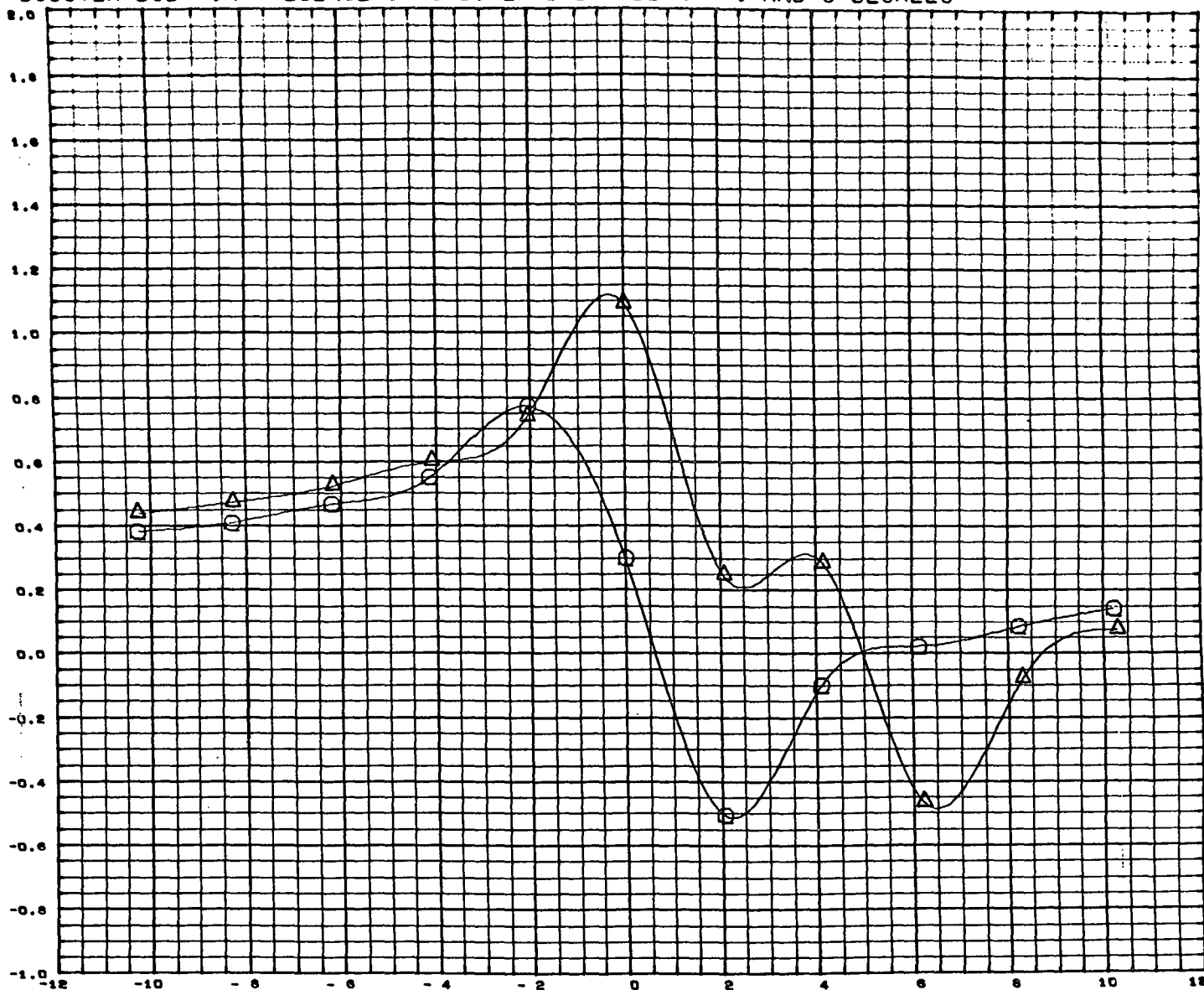
REFERENCE INFORMATION

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|-------|---------|--------|
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| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.599

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

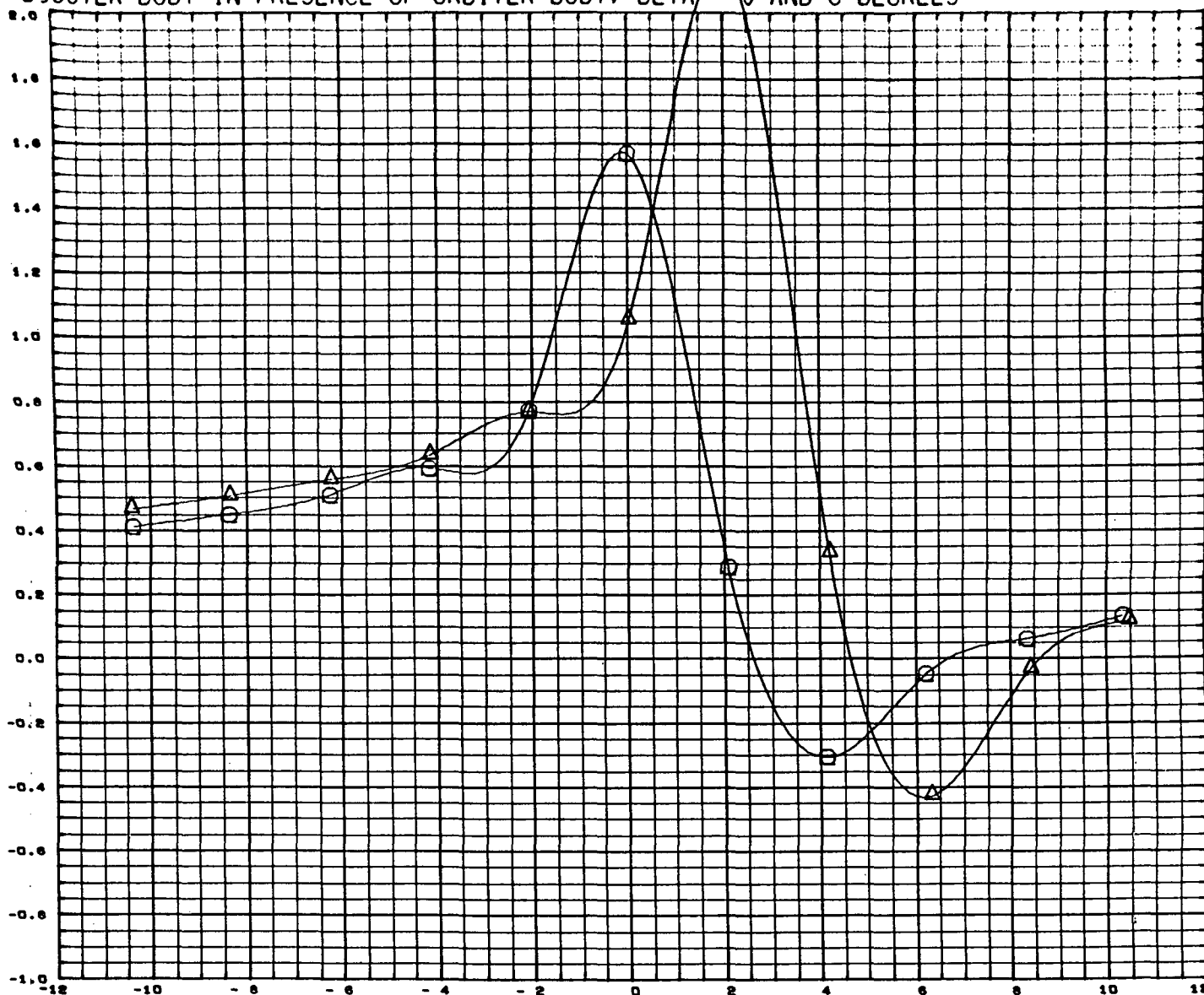
BETA POSITN ORBINC
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REFERENCE INFORMATION
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 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.897

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA Δ 0 AND 6 DEGREES

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3208A) Δ MSFC490 NR/GD LAUNCH B20+B5
 (H3217A) Δ MSFC490 NR/GD LAUNCH B20+B5

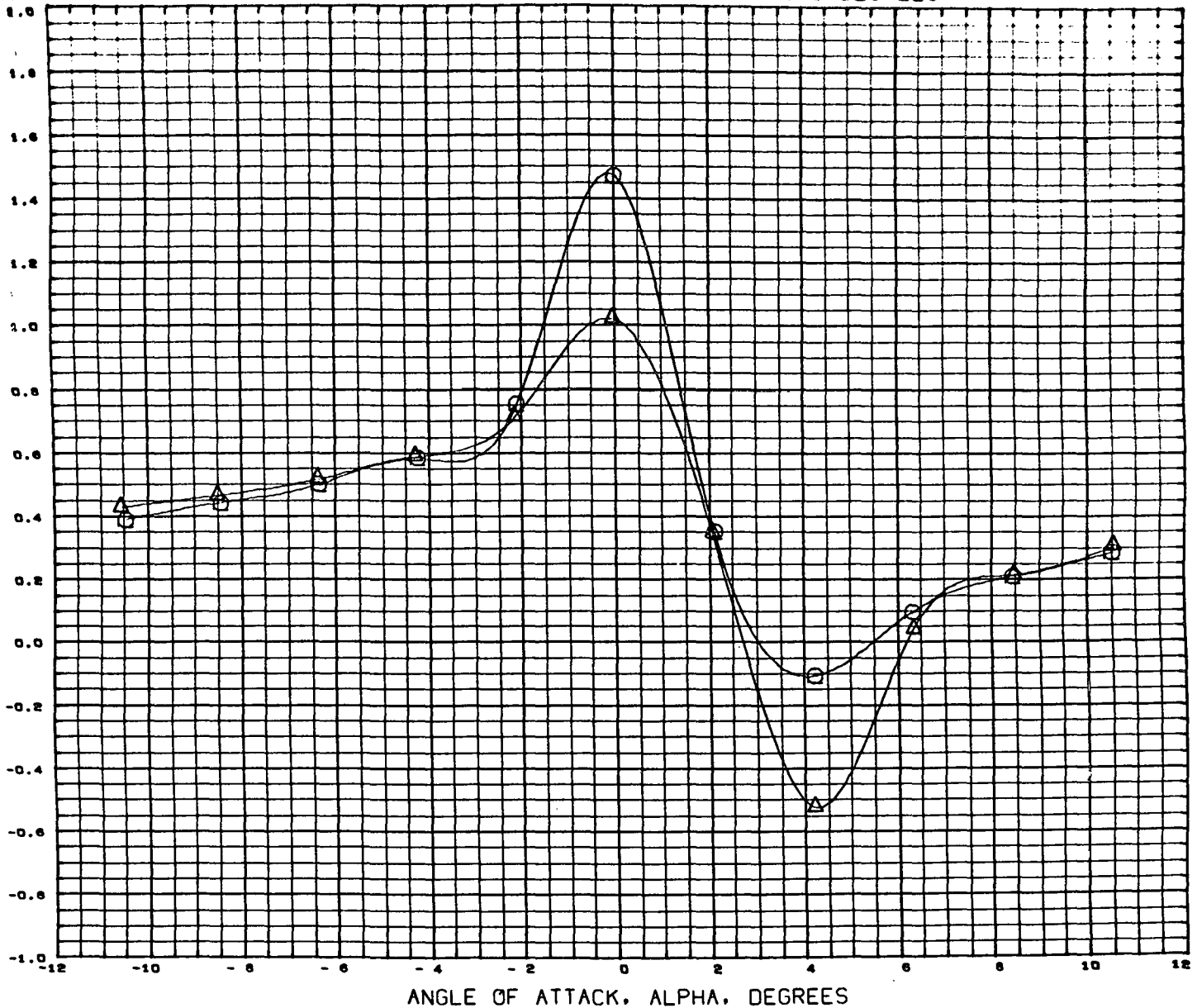
BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.096

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3208A) MSFC490 NR/GD LAUNCH B20+B5
 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

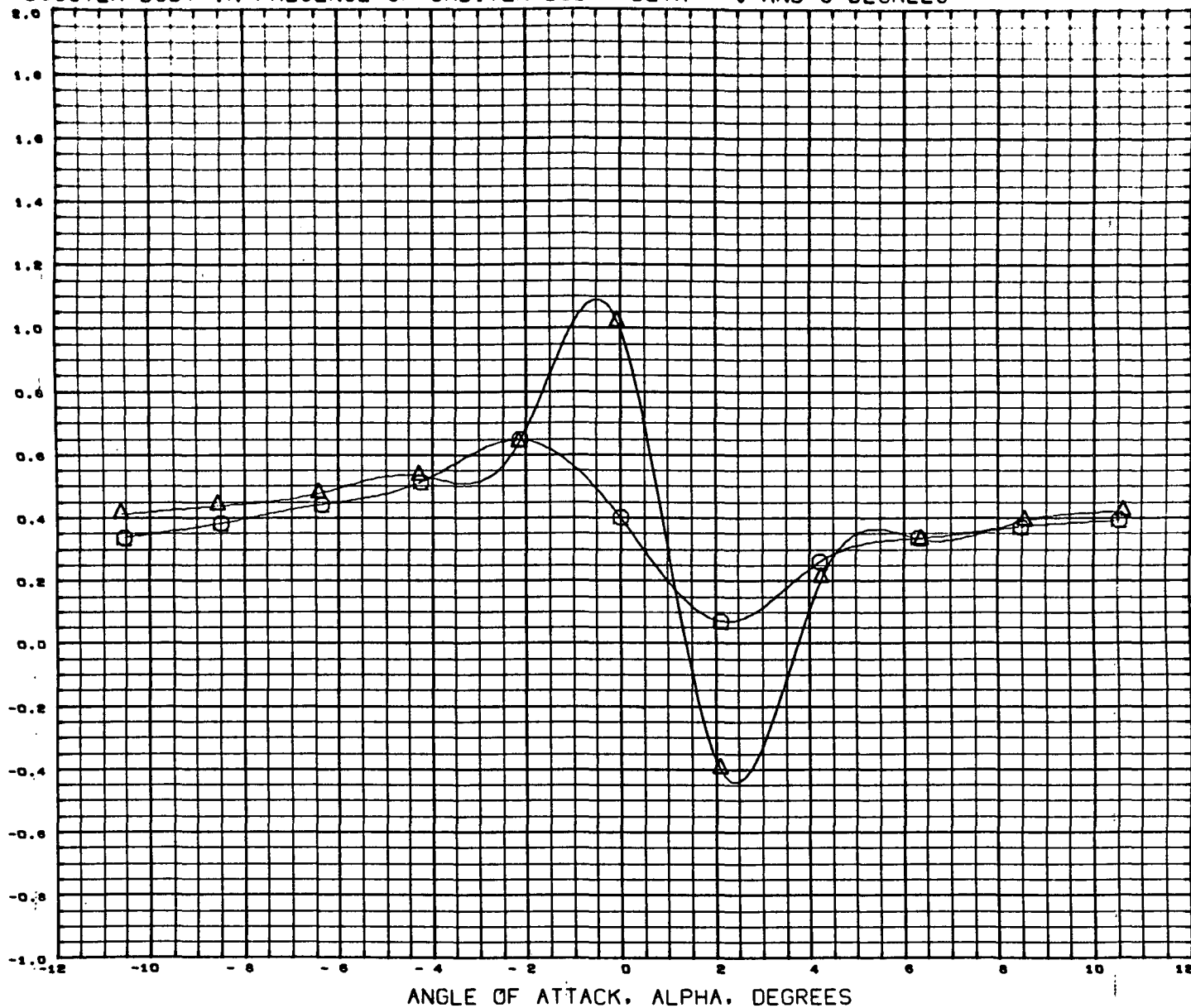
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.469

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



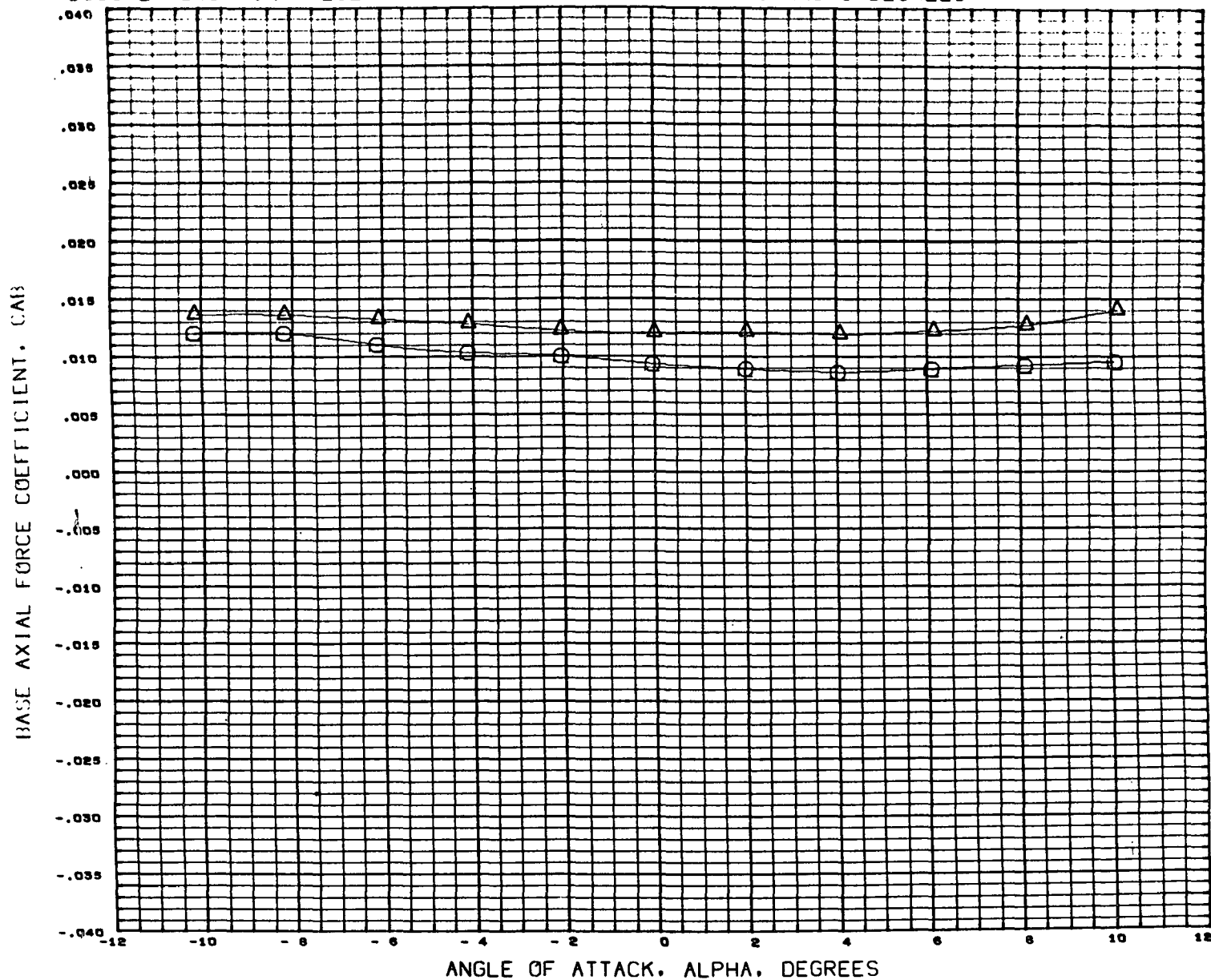
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3208A) MSFC490 NR/GD LAUNCH B20+B5
 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 19.6960 SQ IN
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 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.958

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



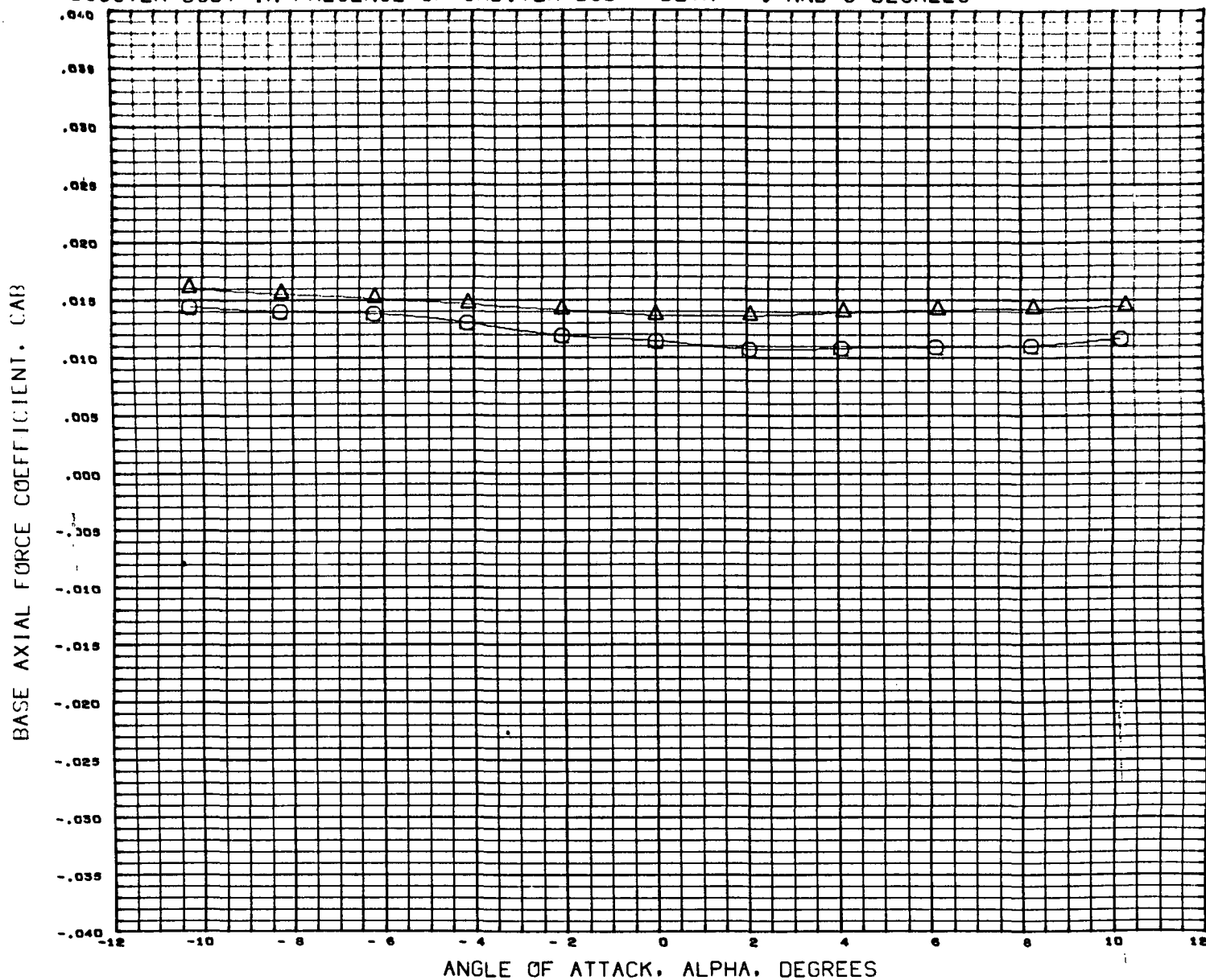
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.599

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



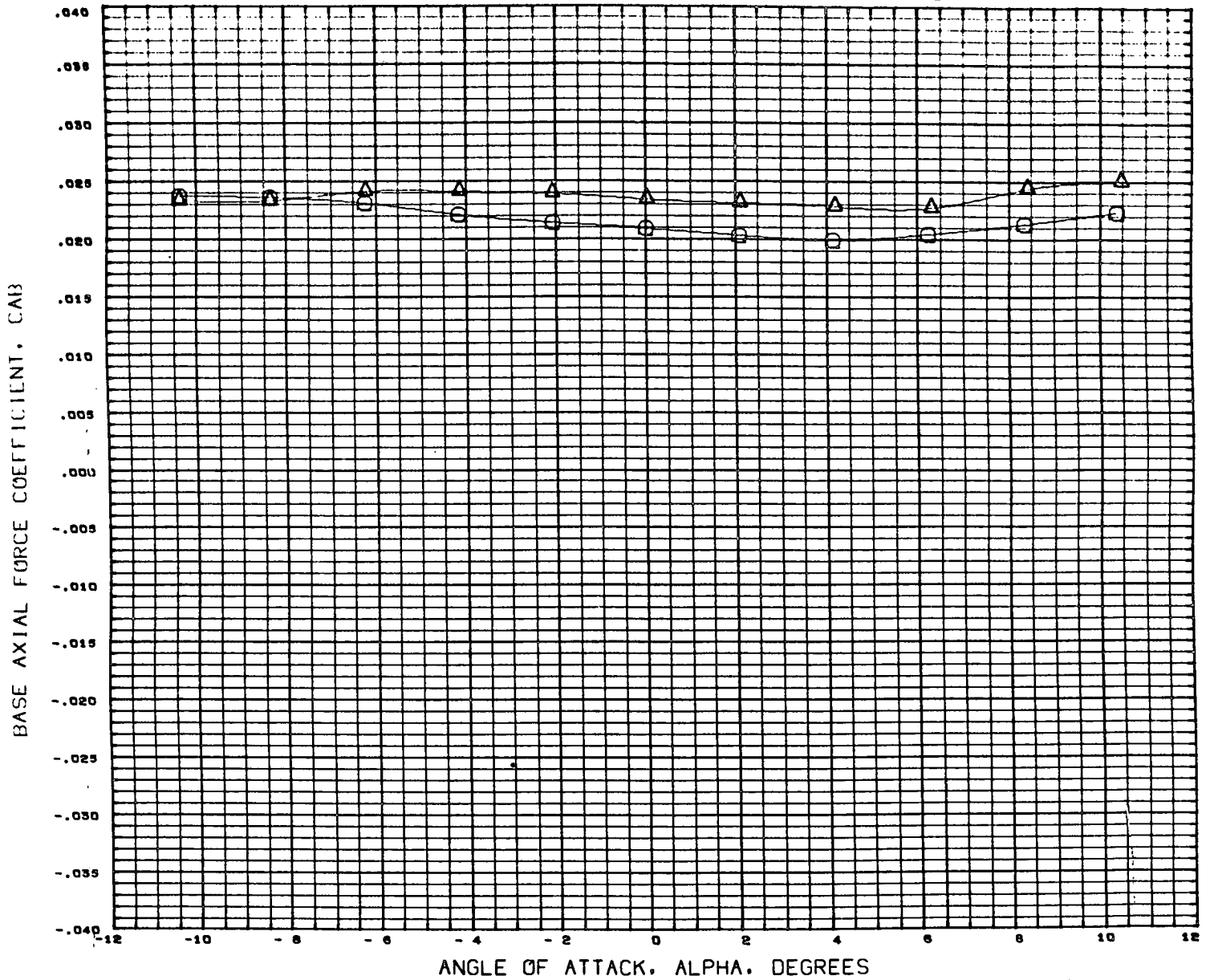
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 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
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 SCALE 0.0035 SCALE

MACH 0.897

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



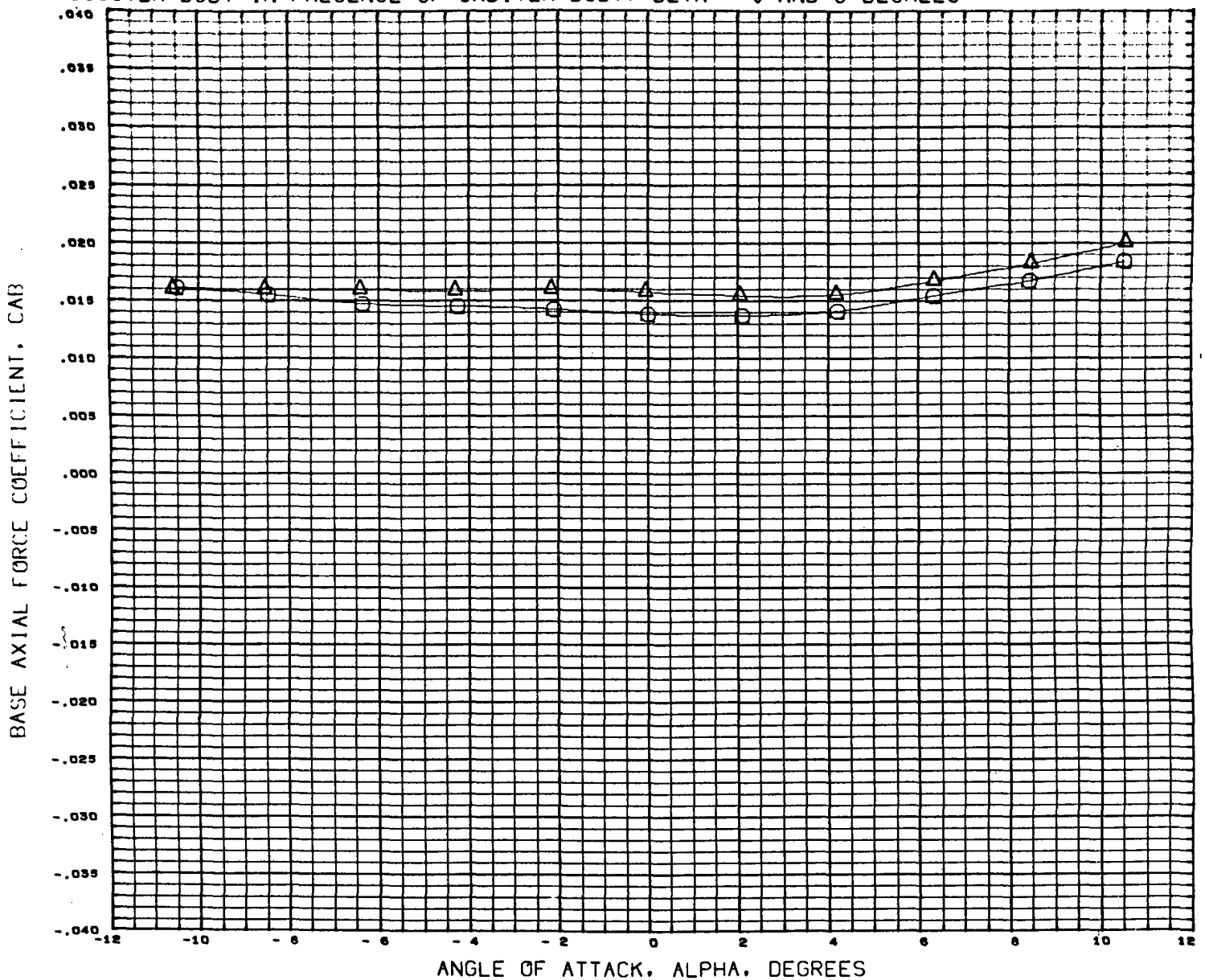
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.096

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



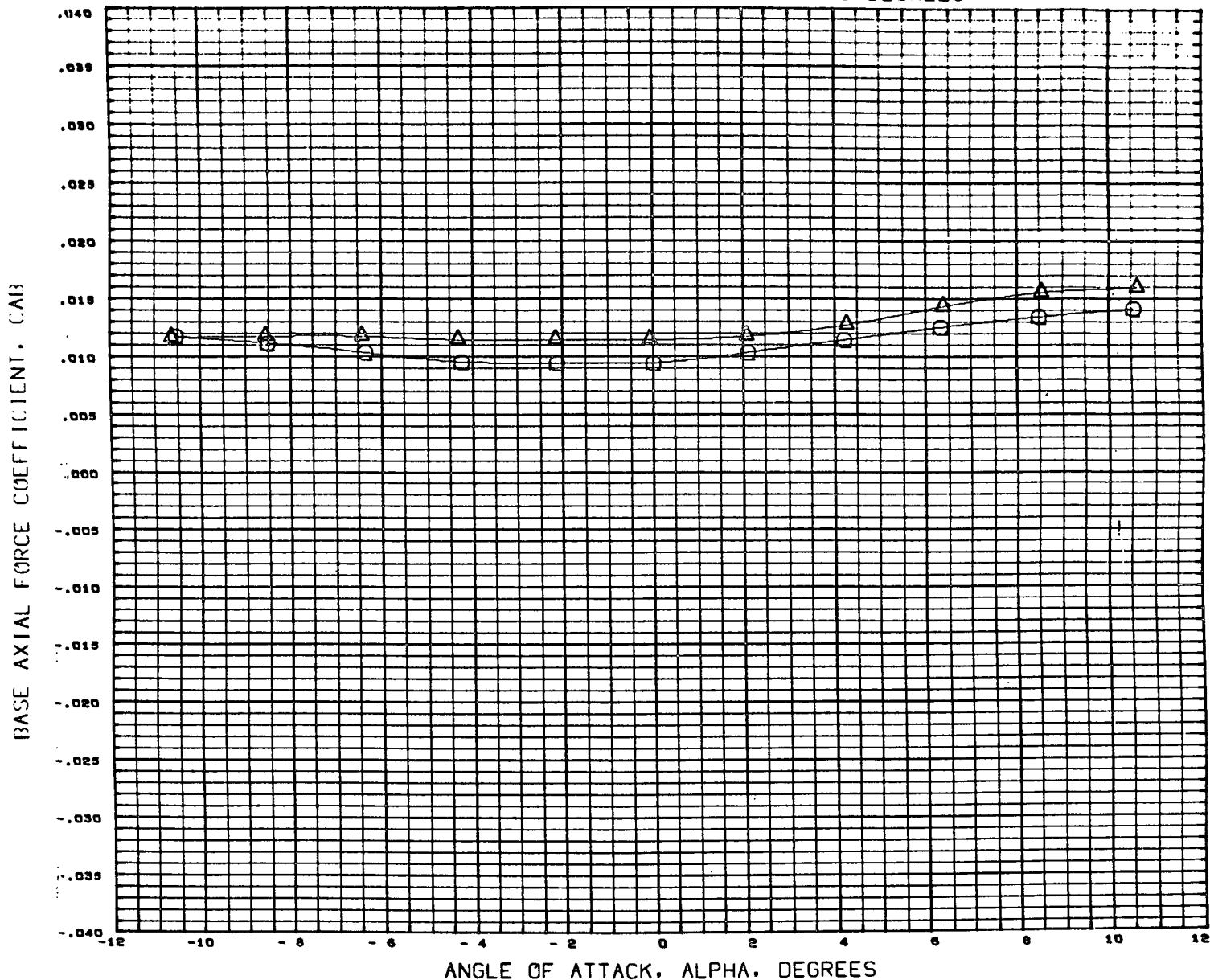
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3208A) MSFC490 NR/GD LAUNCH B20+B5
 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6360 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.469

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3208A) MSFC490 NR/GD LAUNCH B20+B5
 (H3217A) MSFC490 NR/GD LAUNCH B20+B5

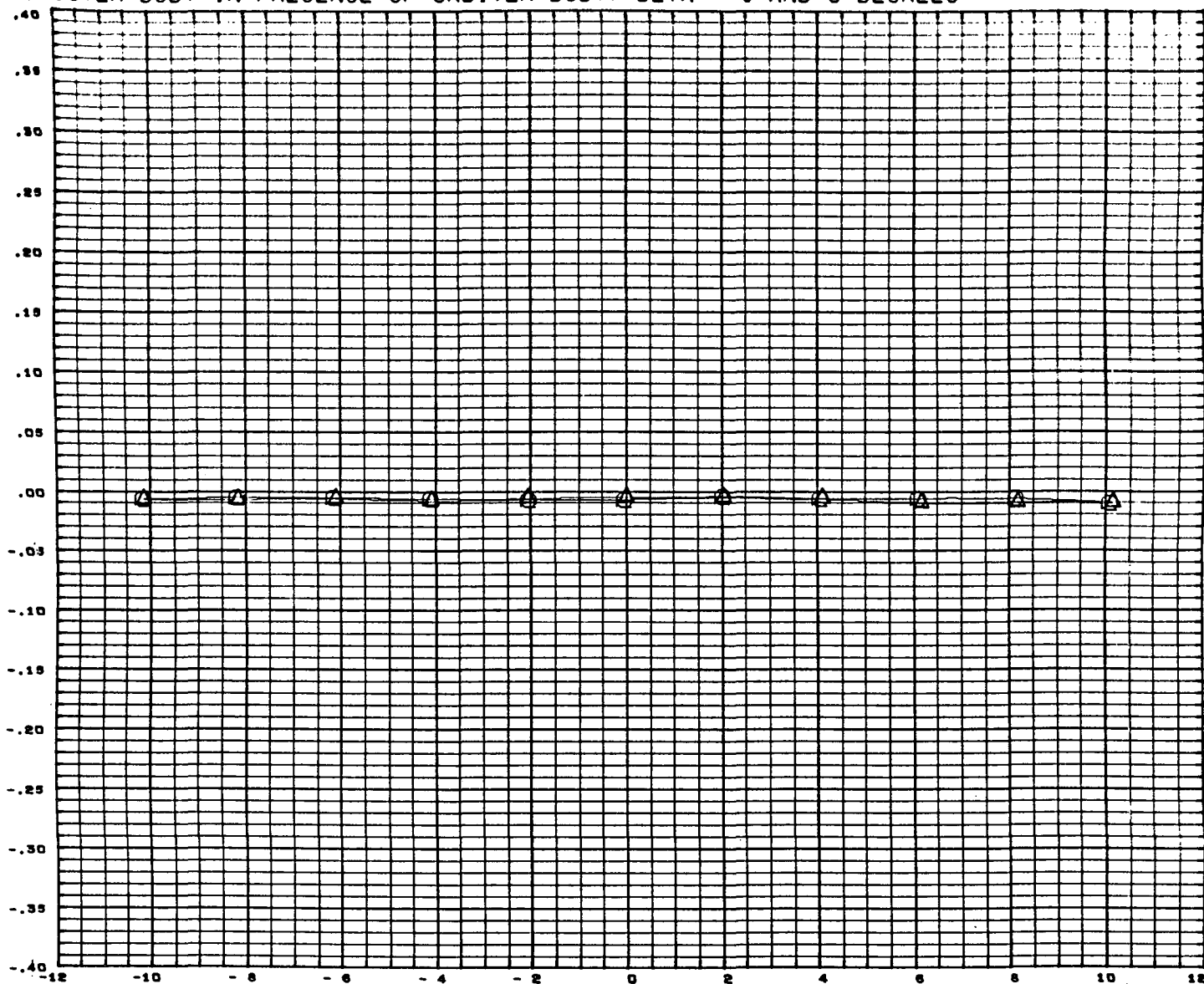
BETA POSITN ORBINC
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 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.998

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMULATIVE PER DEGREE

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREES



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13206A) MSFC490 NR/GD LAUNCH B20+B5
 (13217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.599

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (13217A) | MSFC490 NR/GD LAUNCH B20+B5 |

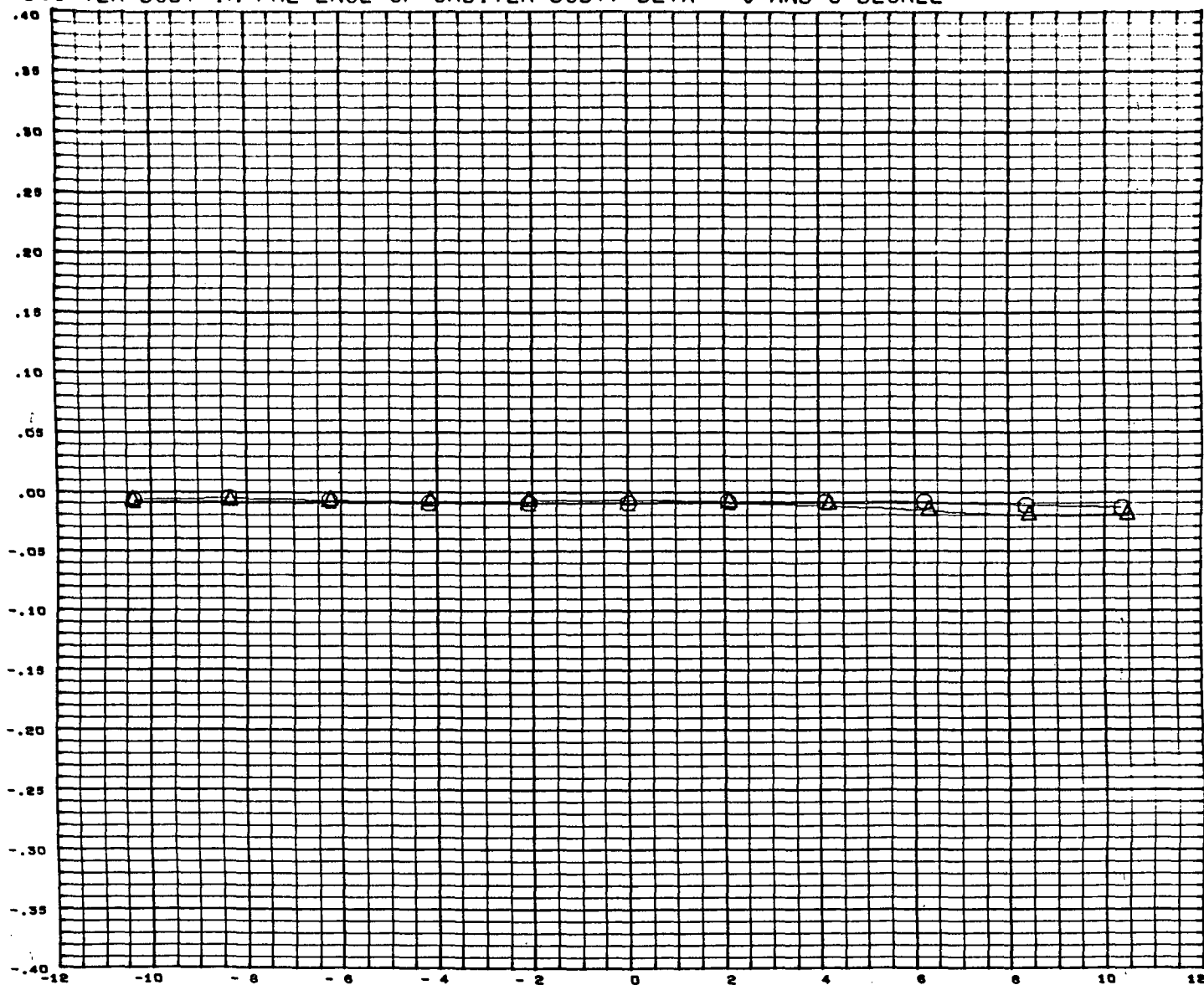
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.897

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE • CLMAMP (PER DEGREE)

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE



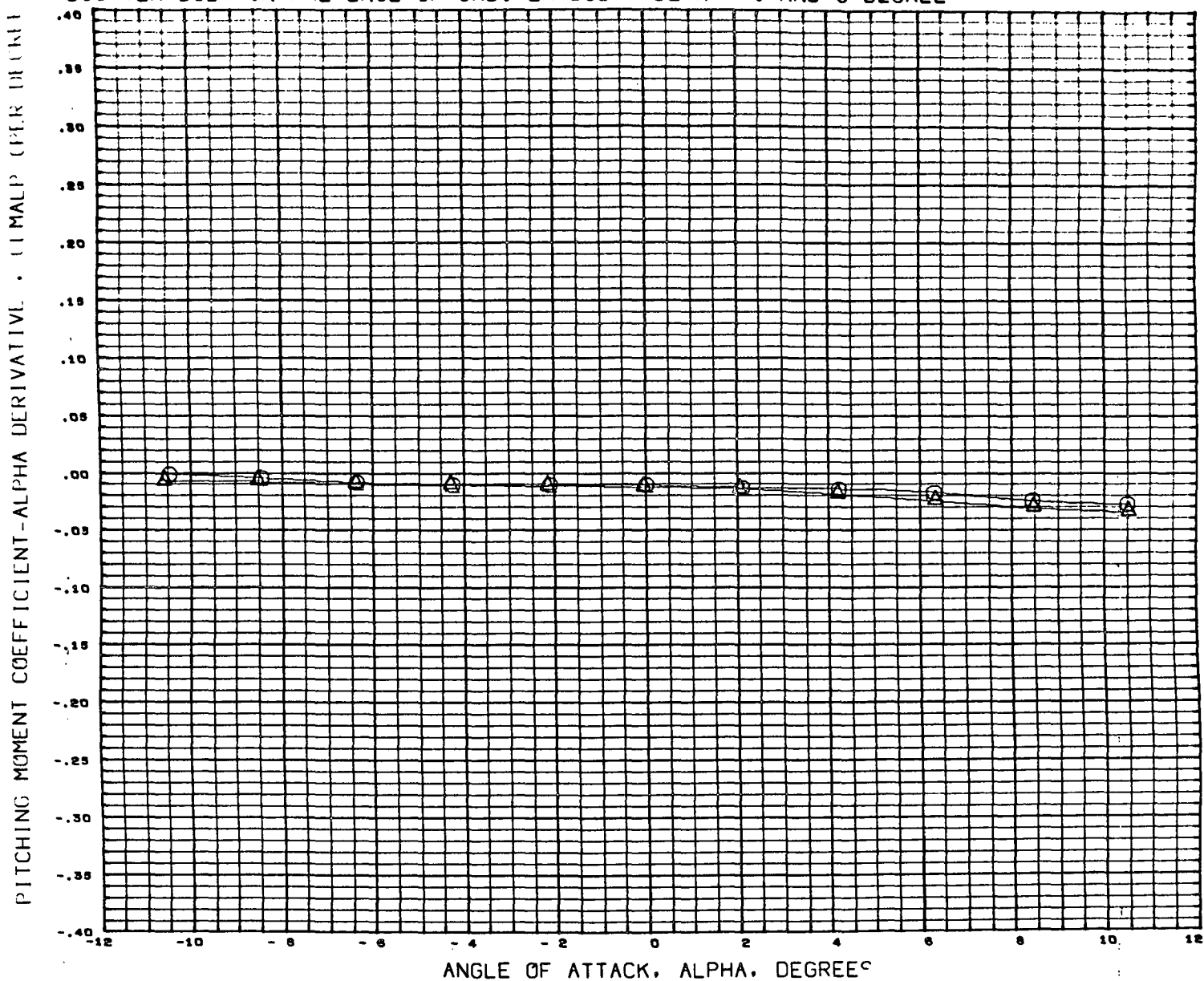
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13208A) MSFC490 NR/GD LAUNCH B20+B5
 (13217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
 0.000 1.000 0.000
 6.000 1.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.096

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE^c



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------|
| (13208A) | MSFC490 NR/GD LAUNCH 820+B5 |
| (13217A) | MSFC490 NR/GD LAUNCH 820+B5 |

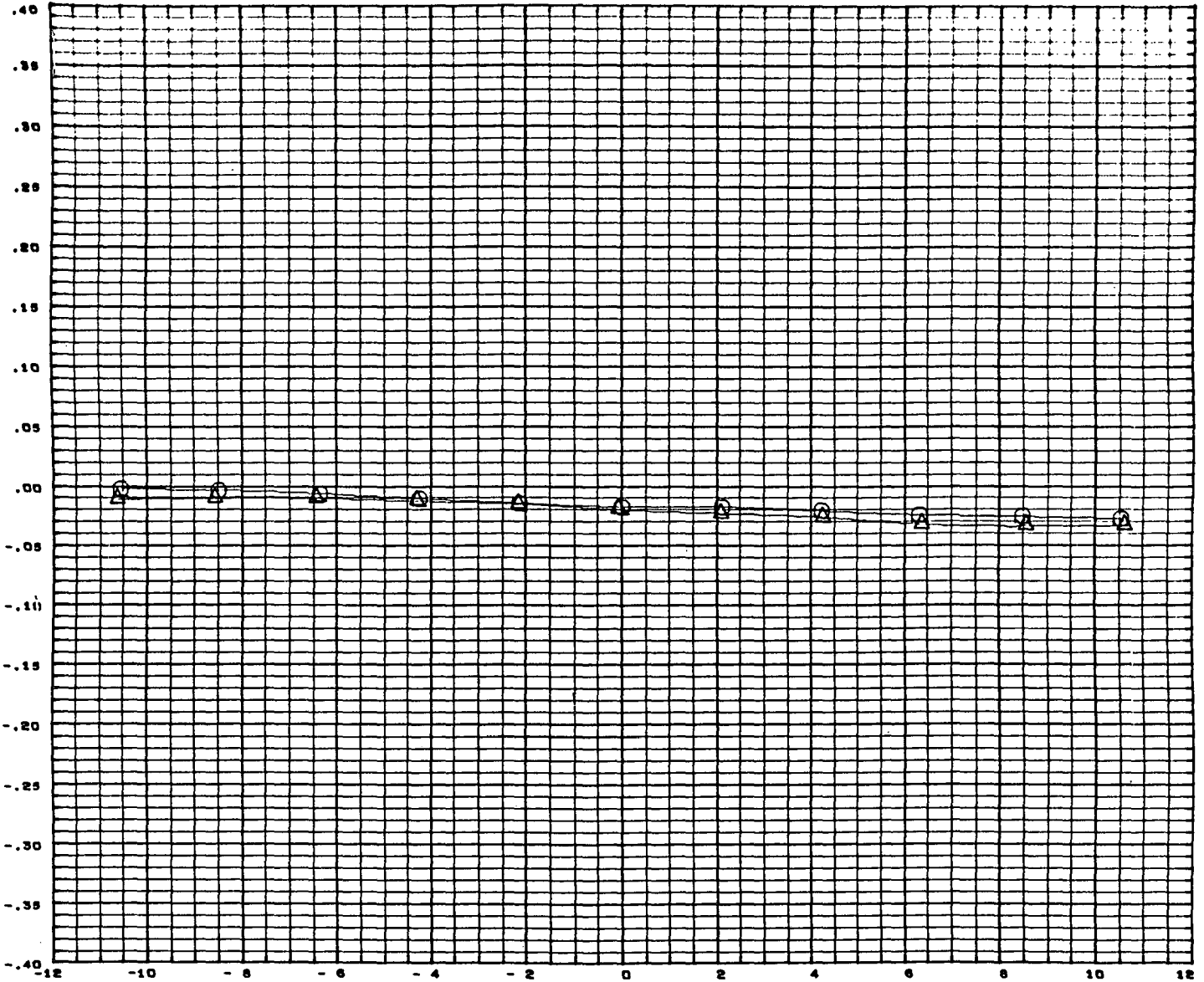
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.469

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE, CLMALP (PER DEGREE)

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE



| | |
|-----------------|-----------------------------|
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
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| (13217A) | MSFC490 NR/GD LAUNCH B20+B5 |

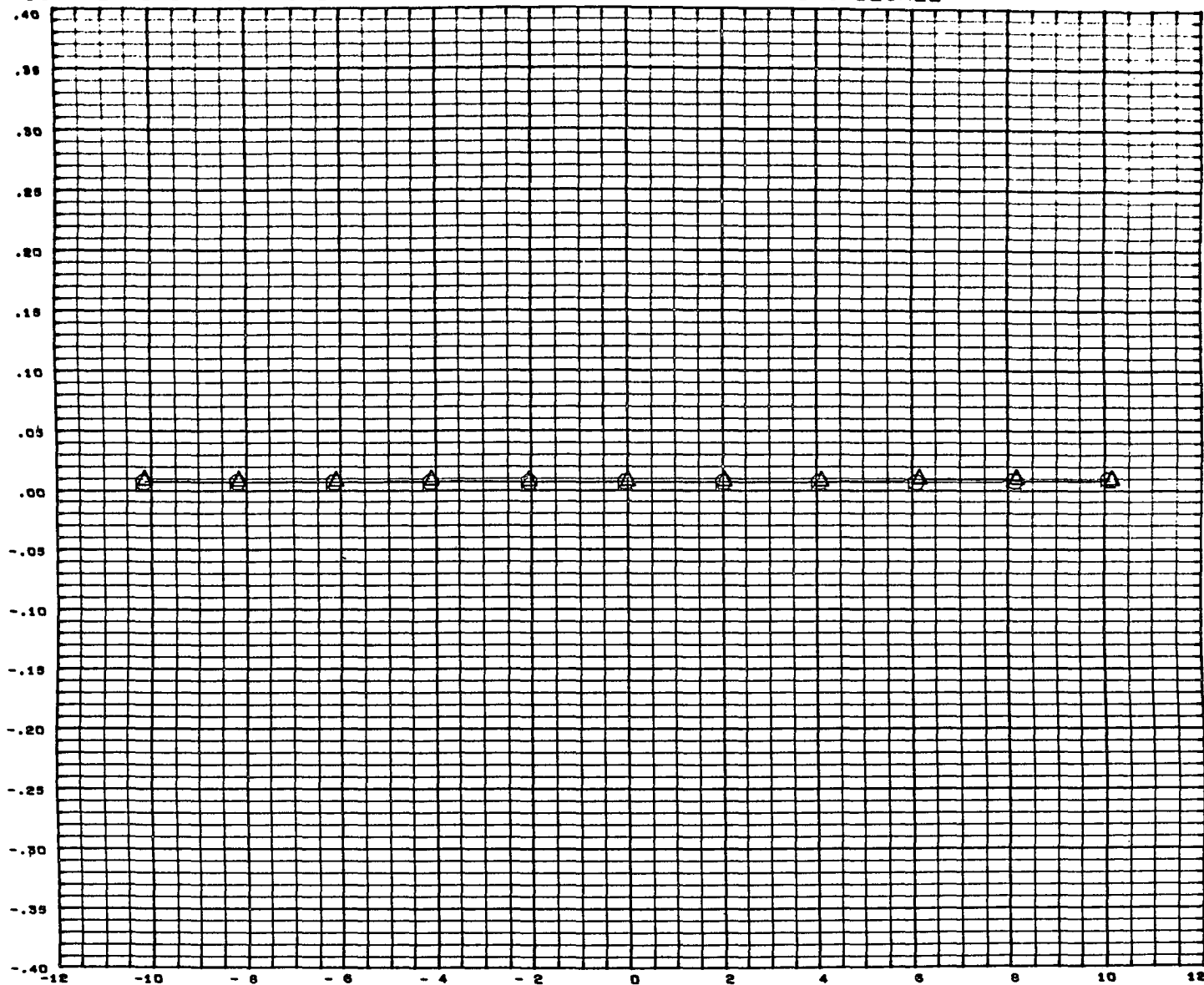
| | | |
|-------|--------|--------|
| BETA | POSITN | ORBINC |
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| | |
|-----------------------|---------------|
| REFERENCE INFORMATION | |
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.958

BOOSTER BODY IN PRE^{SEN}CE OF ORBITER BODY, BETA = 0 AND 6 DEGREE^S

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, C_NALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREE^S

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(13208A) MSFC490 NR/GD LAUNCH B20+B5
(13217A) MSFC490 NR/GD LAUNCH B20+B5

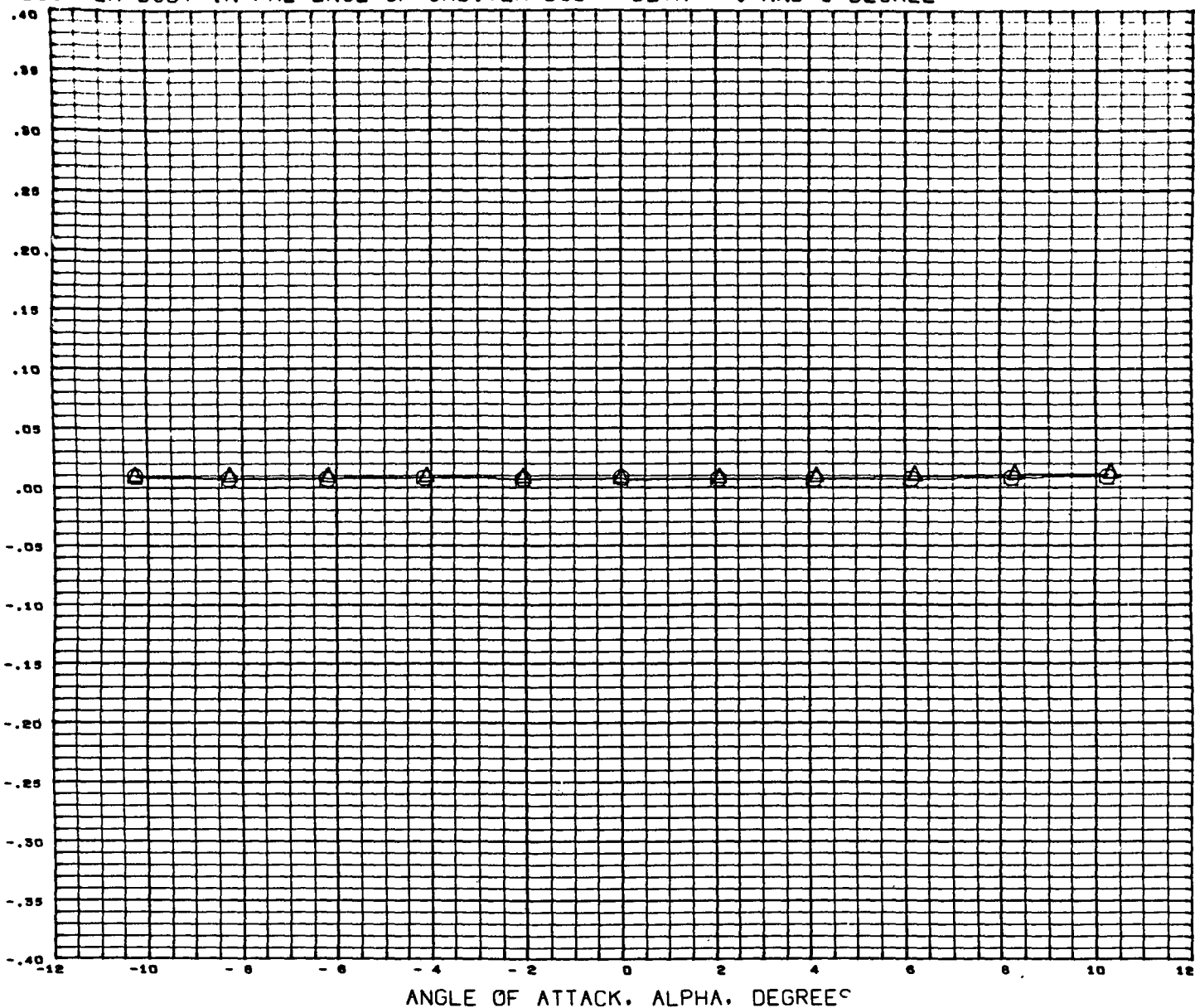
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

REFERENCE INFORMATION
SREF 15.6560 SQ IN
LREF 3.0950 INCHES
BREF 6.0990 INCHES
XMRP 0.0000
YMRP 0.0000
ZMRP 0.0000
SCALE 0.0039 SCALE

MACH 0.599

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE^s

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------|
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| (13217A) | MSFC490 NR/GD LAUNCH 820+85 |

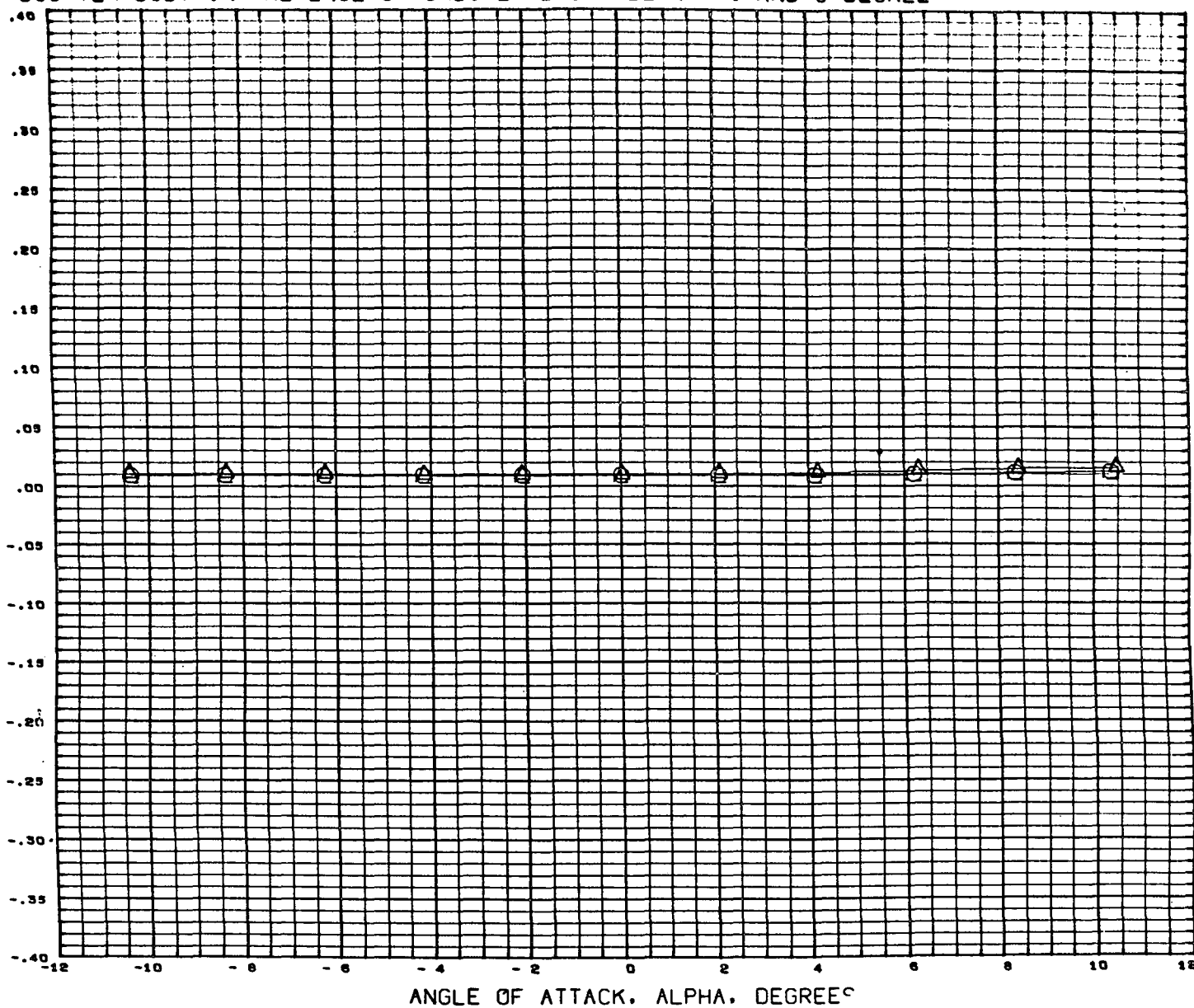
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.897

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE°

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNAPH (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------|
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| (13217A) | MSFC490 NR/GD LAUNCH B20+B5 |

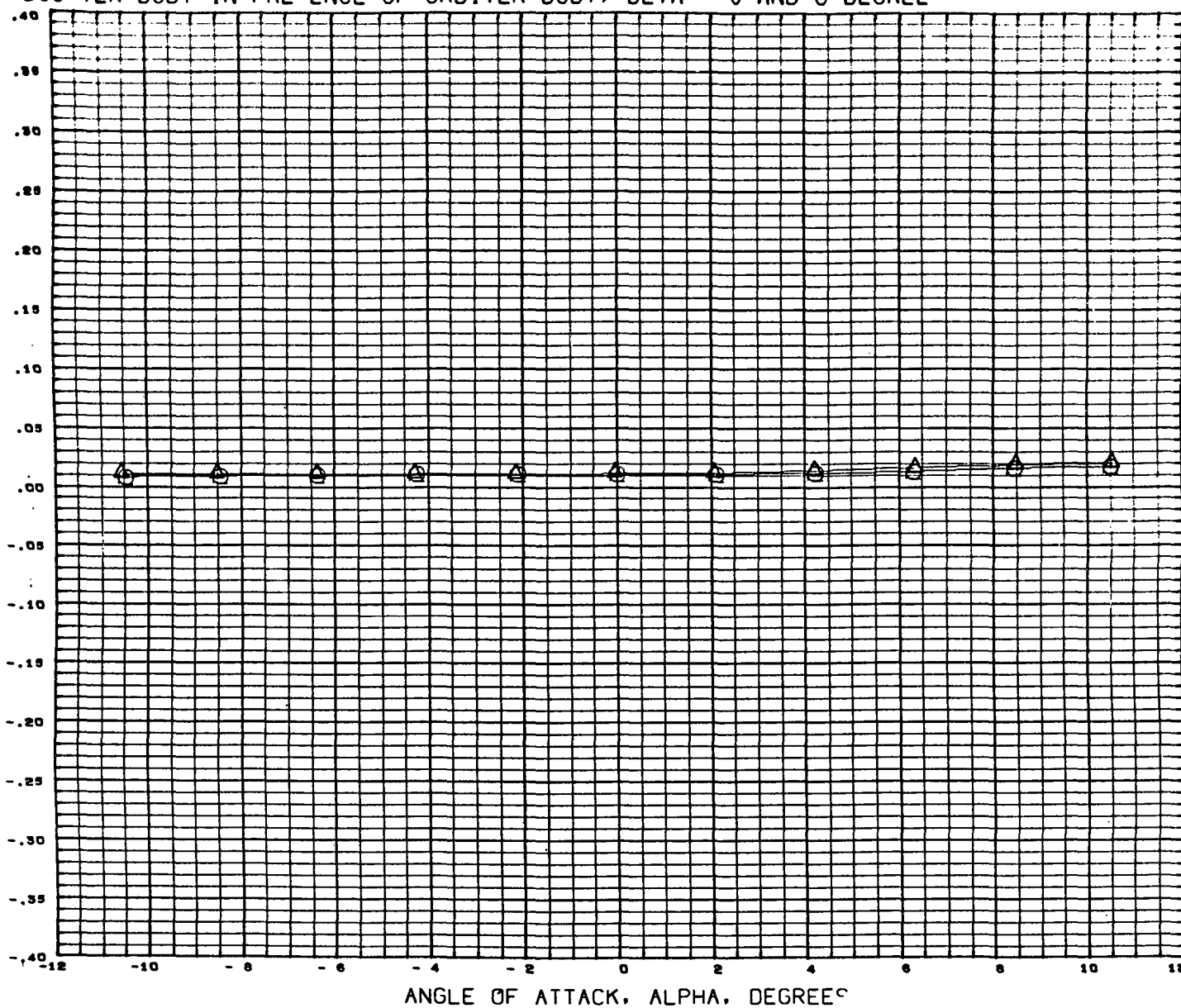
| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE^c

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (13217A) MSFC490 NR/GD LAUNCH B20+B5

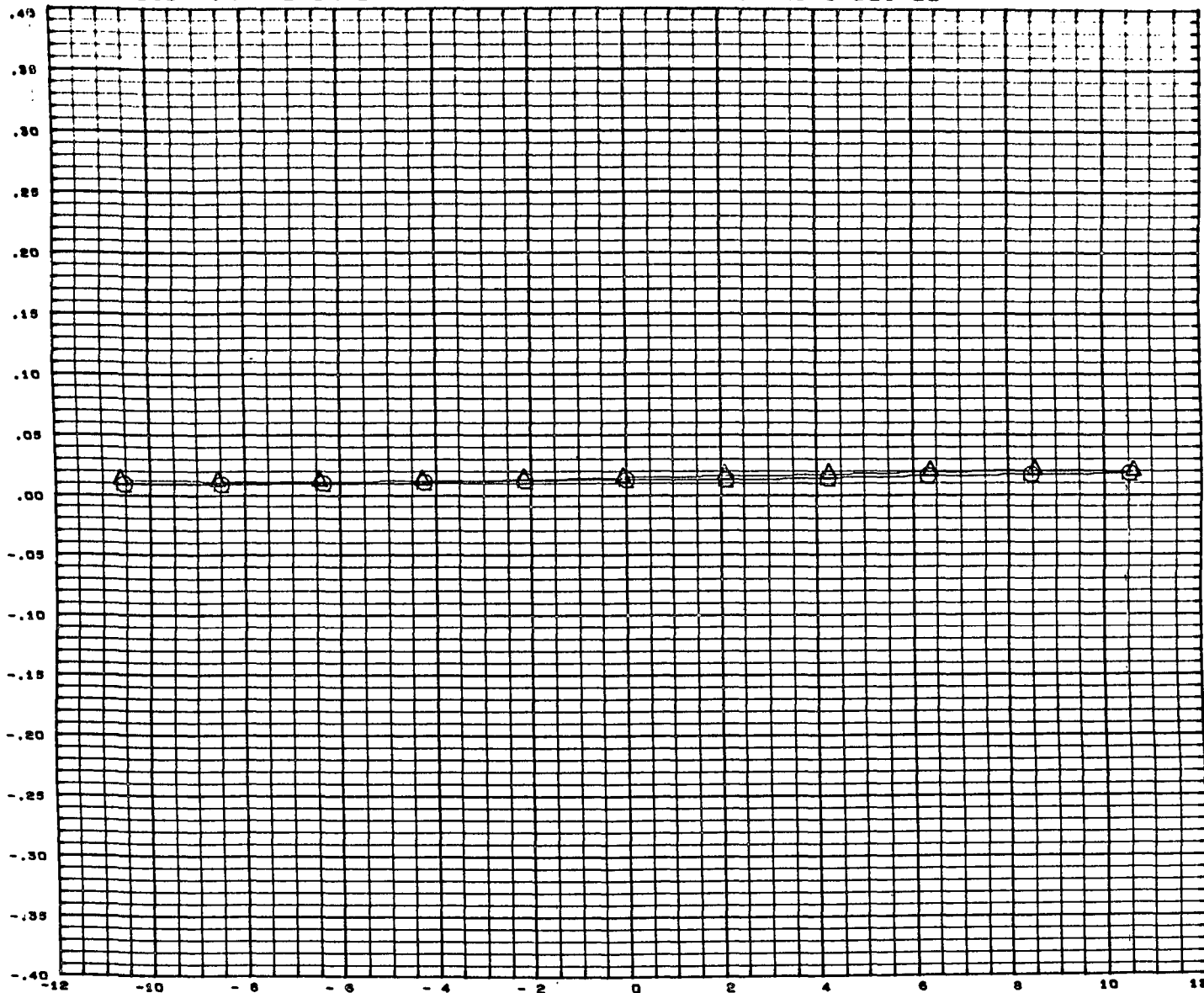
BETA POSITN ORBINC
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REFERENCE INFORMATION
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 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0033 SCALE

MACH 1.469

BOO^oTER BODY IN PRE^oENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE^o

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
(13208A) MSFC490 NR/GD LAUNCH B20+B5
(13217A) MSFC490 NR/GD LAUNCH B20+B5

BETA POSITN ORBINC
0.000 1.000 0.000
6.000 1.000 0.000

REFERENCE INFORMATION
SREF 15.6560 SQ IN
LREF 3.0950 INCHES
BREF 6.0890 INCHES
XMRP 0.0000
YMRP 0.0000
ZMRP 0.0000
SCALE 0.0035 SCALE

MACH 1.938

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - (CMALP (PER DEGREE))

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE

ALPHA=0.



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (J3208A) MSFC490 NR/GD LAUNCH B20+B5
 (J3217A) MSFC490 NR/GD LAUNCH B20+B5

| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 6.000 | 1.000 | 0.000 |

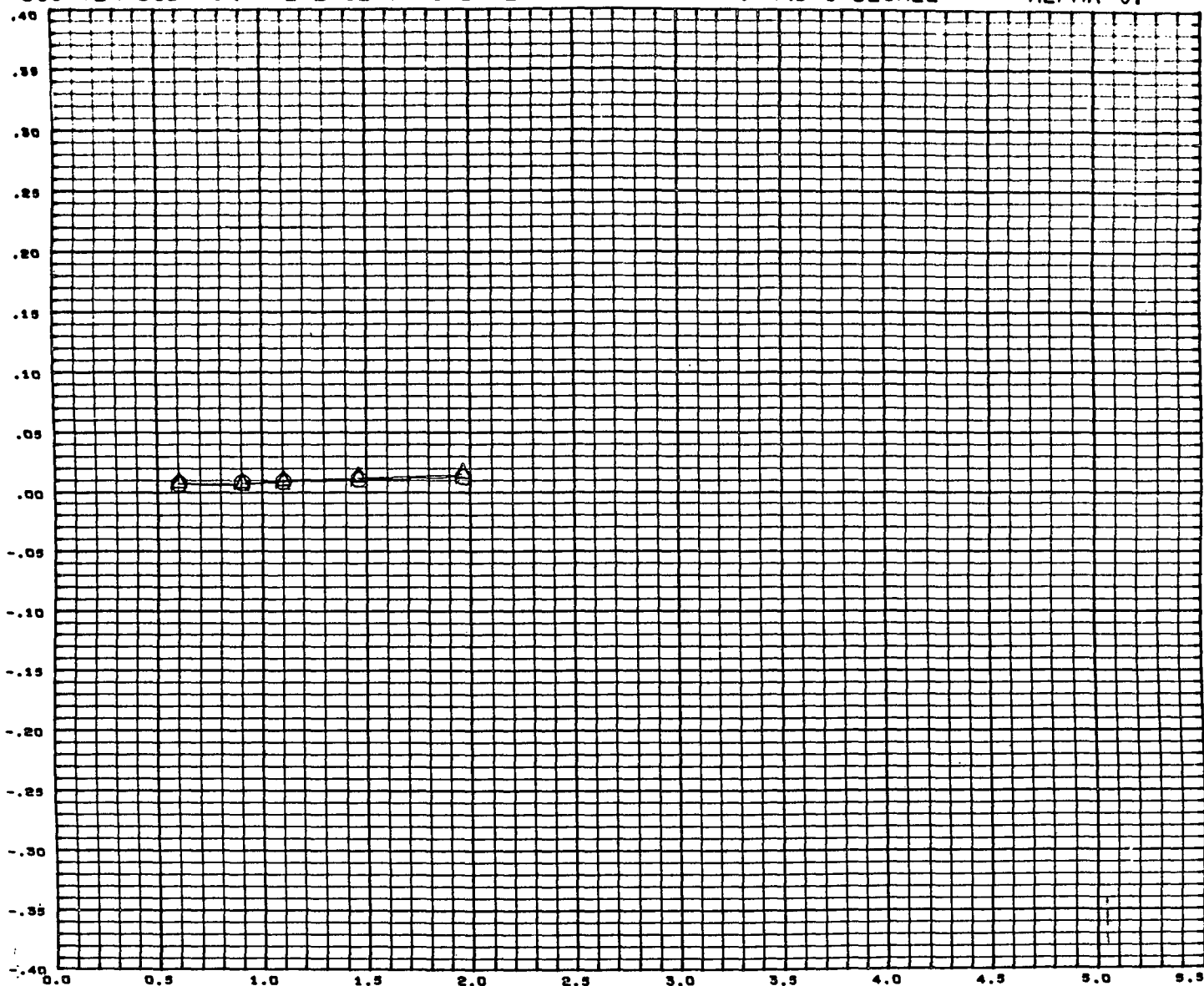
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| BREF | 6.0990 INCHES |
| XMHP | 0.0000 |
| YMHP | 0.0000 |
| ZMHP | 0.0000 |
| SCALE | 0.0035 SCALE |

ALPHA 0.000

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE°

ALPHA=0.

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



MACH NUMBER

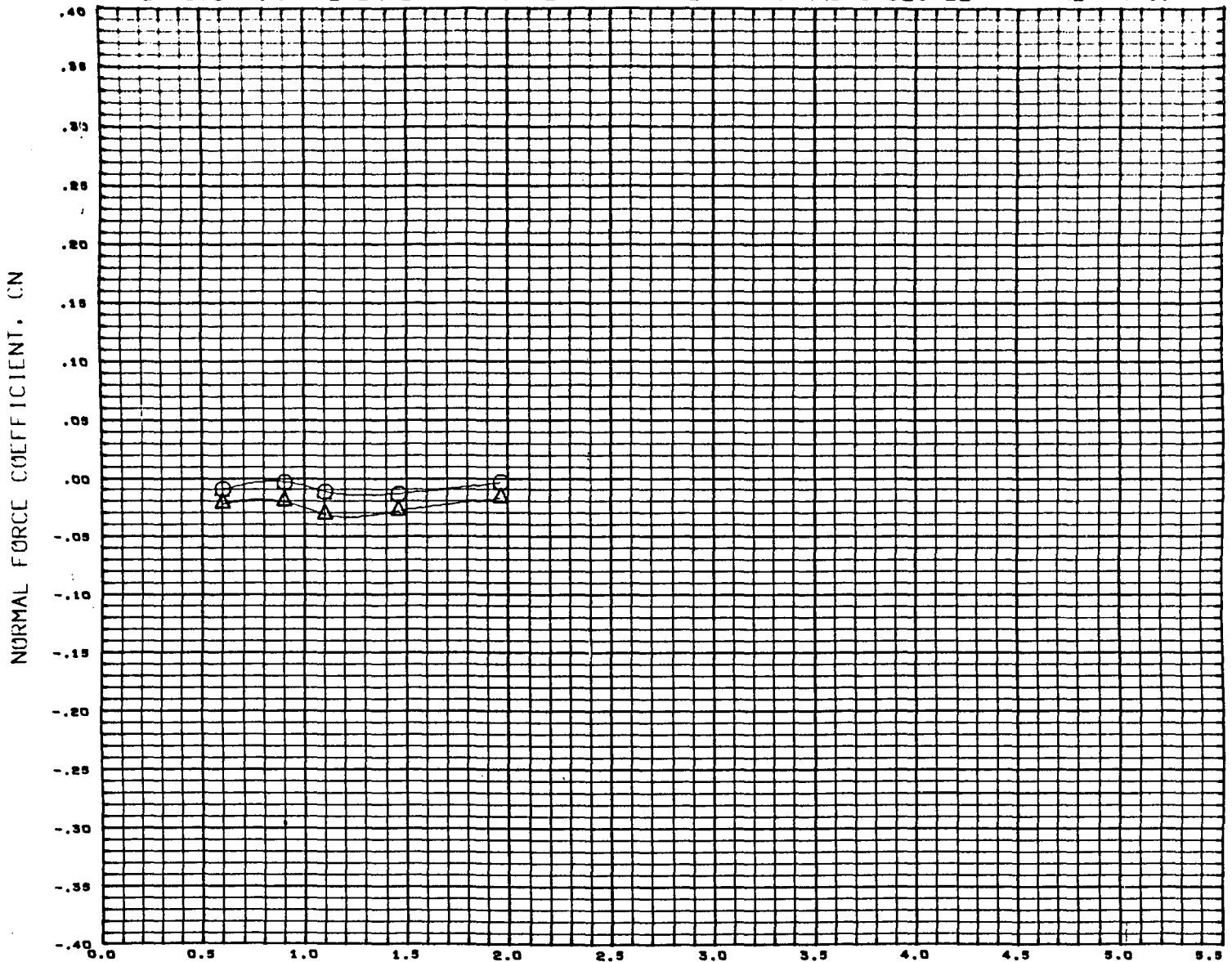
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------|
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| (J3217A) | MSFC490 NR/GD LAUNCH B20+B5 |

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

ALPHA 0.000

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE^c ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------|
| (K3204A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (K3217A) | MSFC490 NR/GD LAUNCH B20+B5 |

MACH NUMBER

| BETA | POSITN | ORBINC |
|-------|--------|--------|
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| 6.000 | 1.000 | 0.000 |

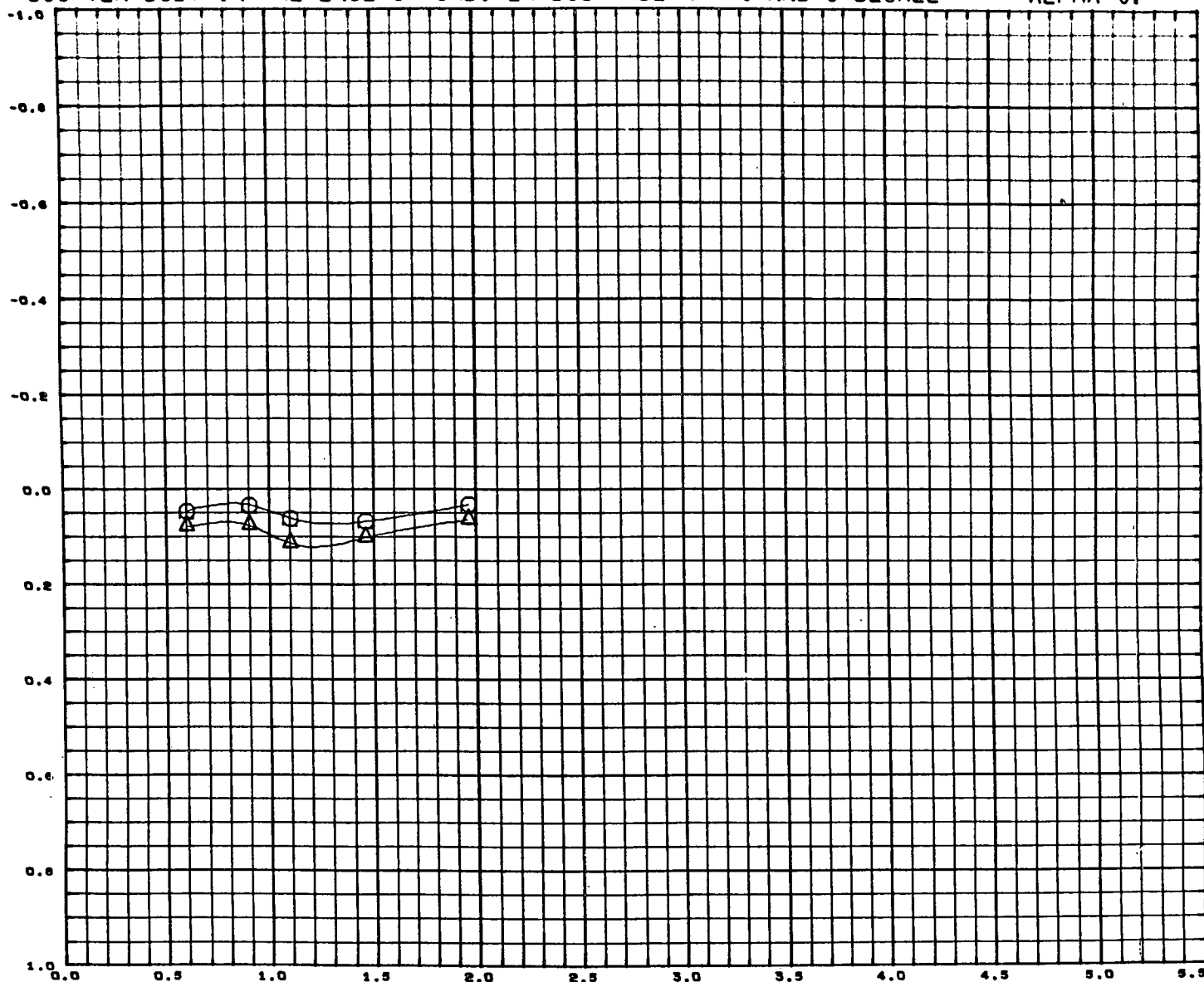
| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

ALPHA 0.000

BOOSTER BODY IN PRESENCE OF ORBITER BODY, BETA = 0 AND 6 DEGREE^c

ALPHA=0.

PITCHING MOMENT COEFFICIENT, CLM



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------|
| (K3208A) | MSFC490 NR/GD LAUNCH B20+B5 |
| (K3217A) | MSFC490 NR/GD LAUNCH B20+B5 |

ALPHA 0.000

MACH NUMBER

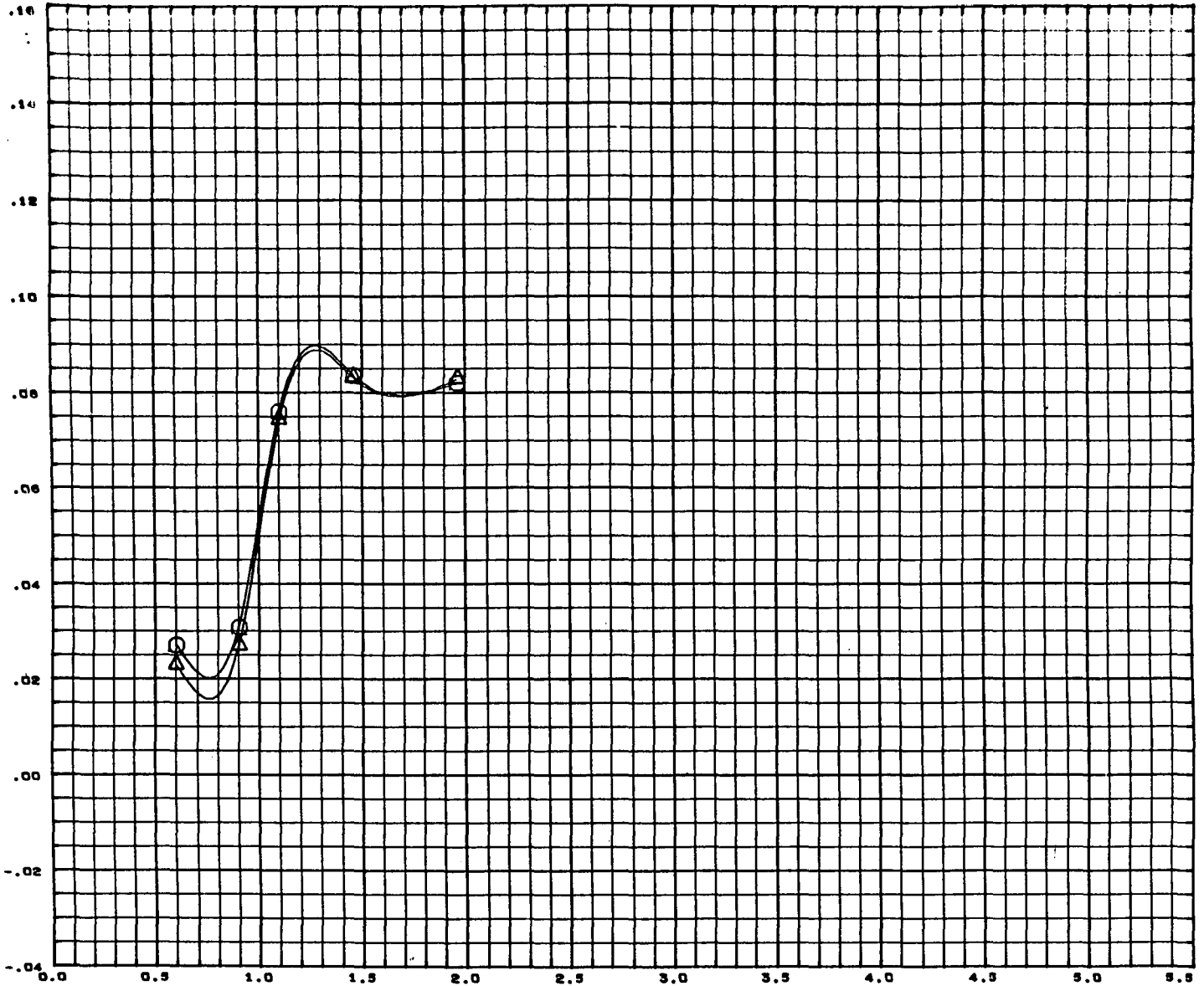
| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | 50 IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

BOOSTER BODY IN PRESENCE OF ORBITER BODY. BETA = 0 AND 6 DEGREES

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



MACH NUMBER

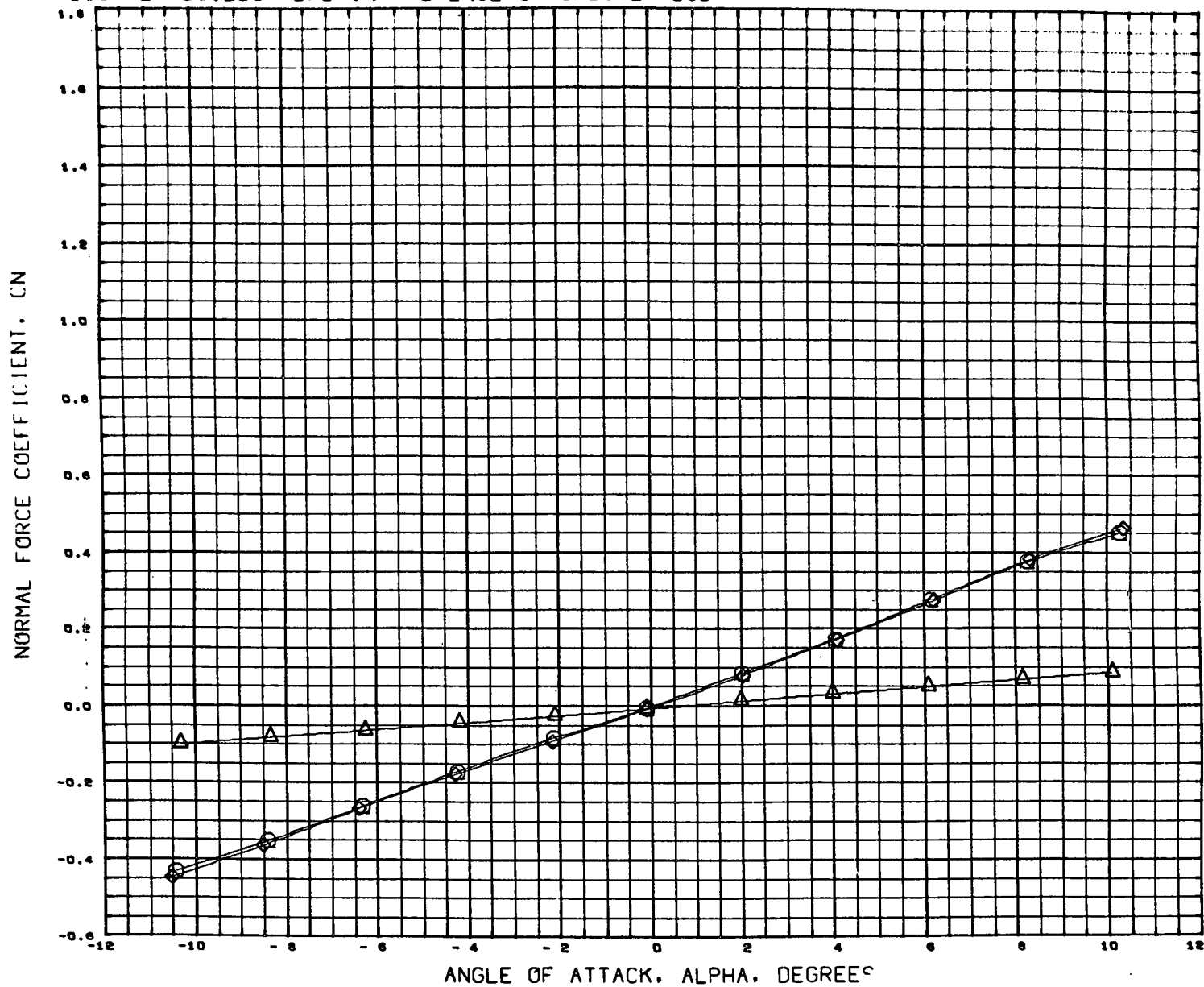
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3208A) MSFC490 NR/GD LAUNCH B20+B5
 (K3217A) MSFC490 NR/GD LAUNCH B20+B5

| BETA | POSITN | ORBINC |
|-------|--------|--------|
| 0.000 | 1.000 | 0.000 |
| 6.000 | 1.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

ALPHA 0.000

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

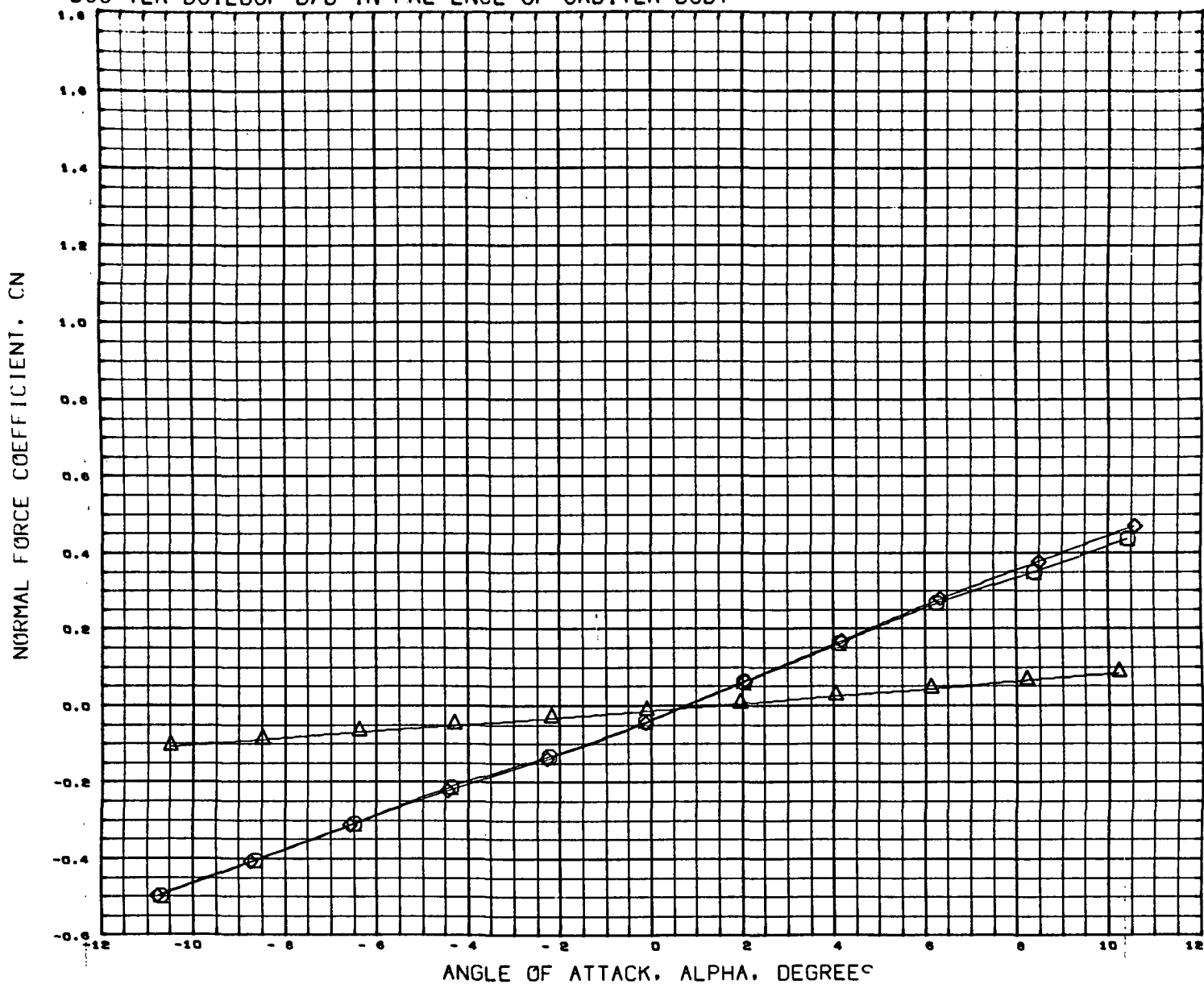


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3245A) ○ MSFC490 NR/GD LAUNCH B20W14+B5
 (H3249A) △ MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3247A) ◇ MSFC490 NR/GD LAUNCH B20C4BW14+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | | 0.000 | 4.000 | SREF | 15.6960 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.600

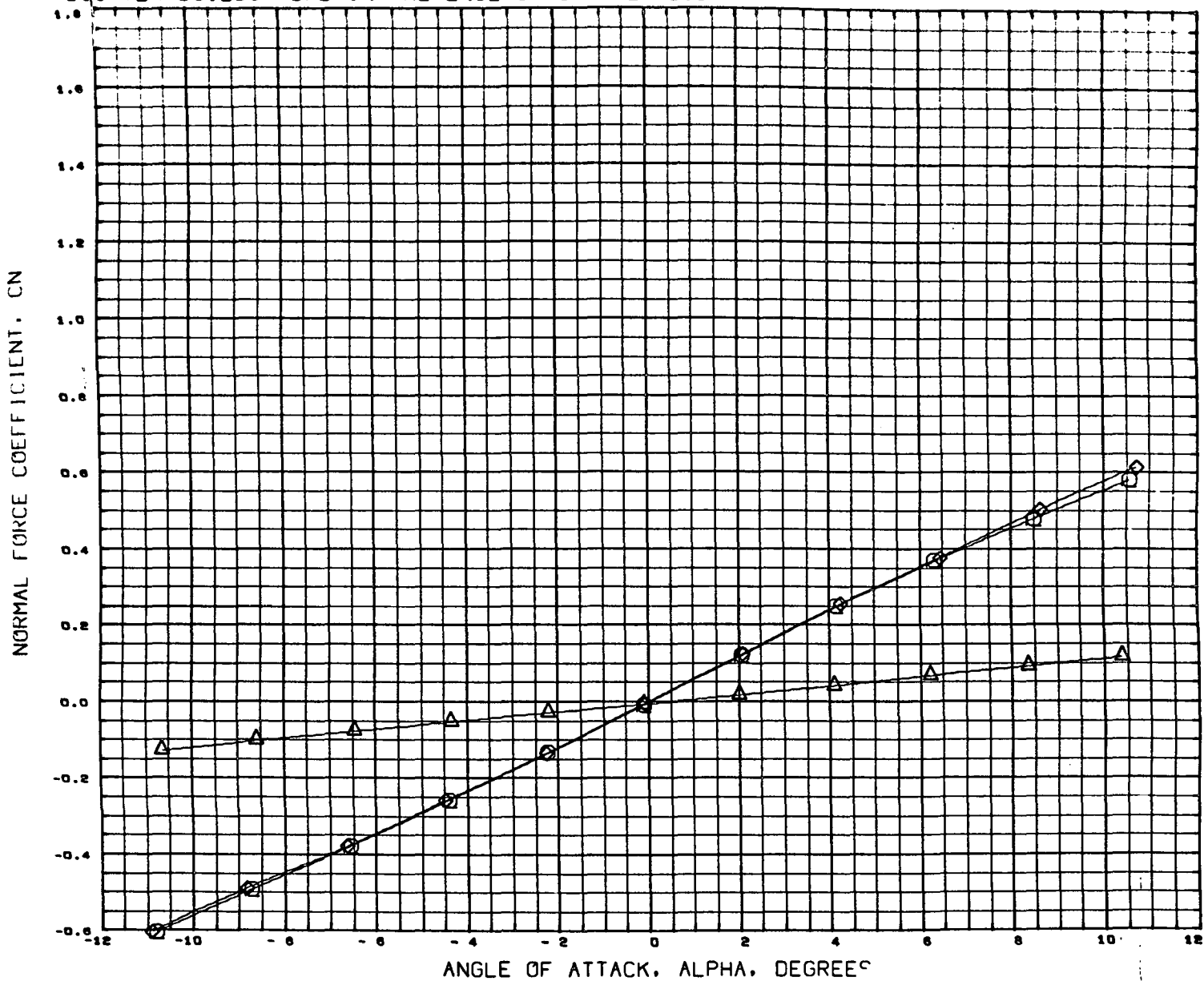
BOOSTER BUILDUP B/B IN PRE^{SEN}CE OF ORBITER BODY



| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|----------|--------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (H3245A) | ○ | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3249A) | △ | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (H3247A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | | XMRP | 0.0000 |
| | | | | | | | YMRP | 0.0000 |
| | | | | | | | ZMRP | 0.0000 |
| | | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

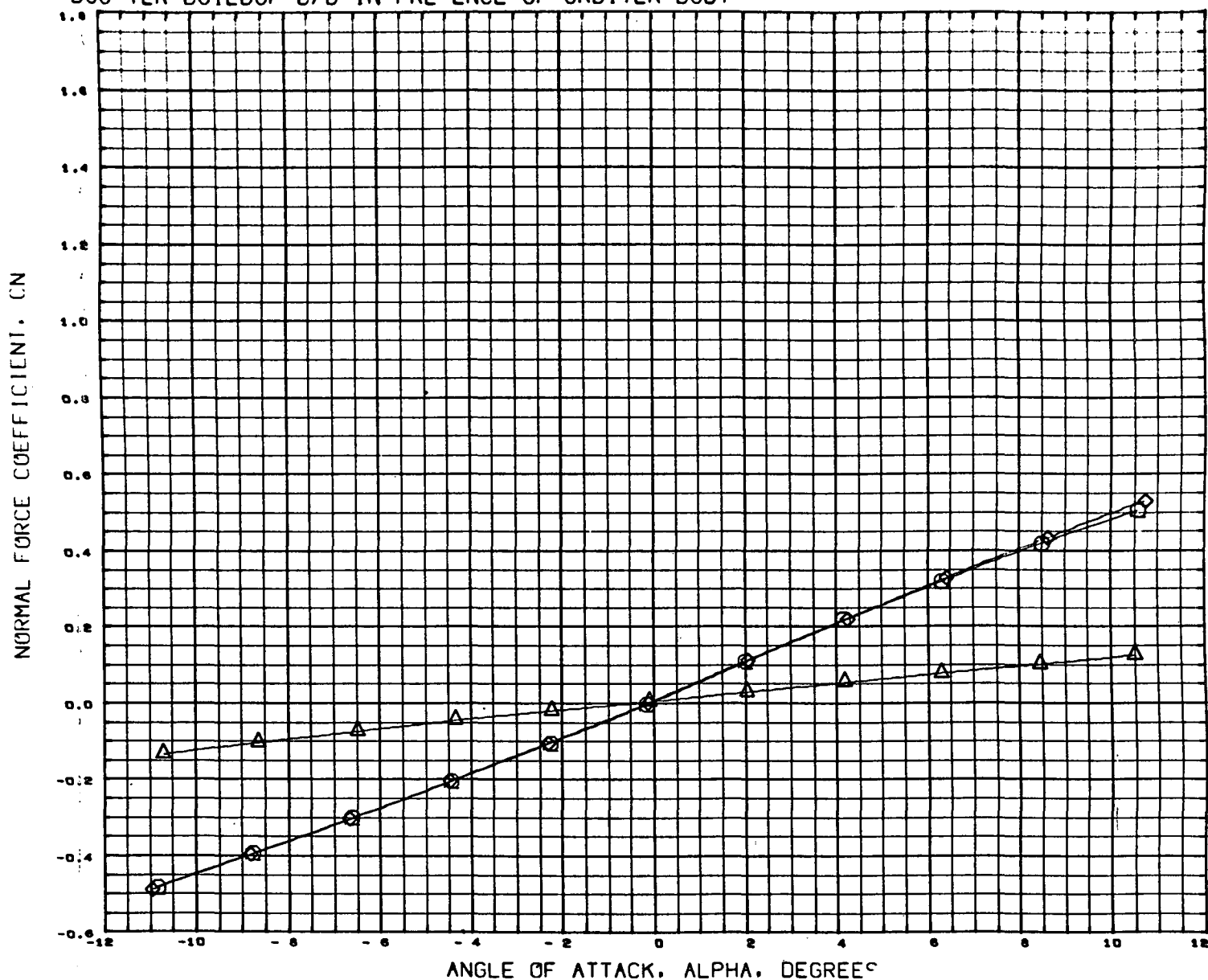


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 19.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.096

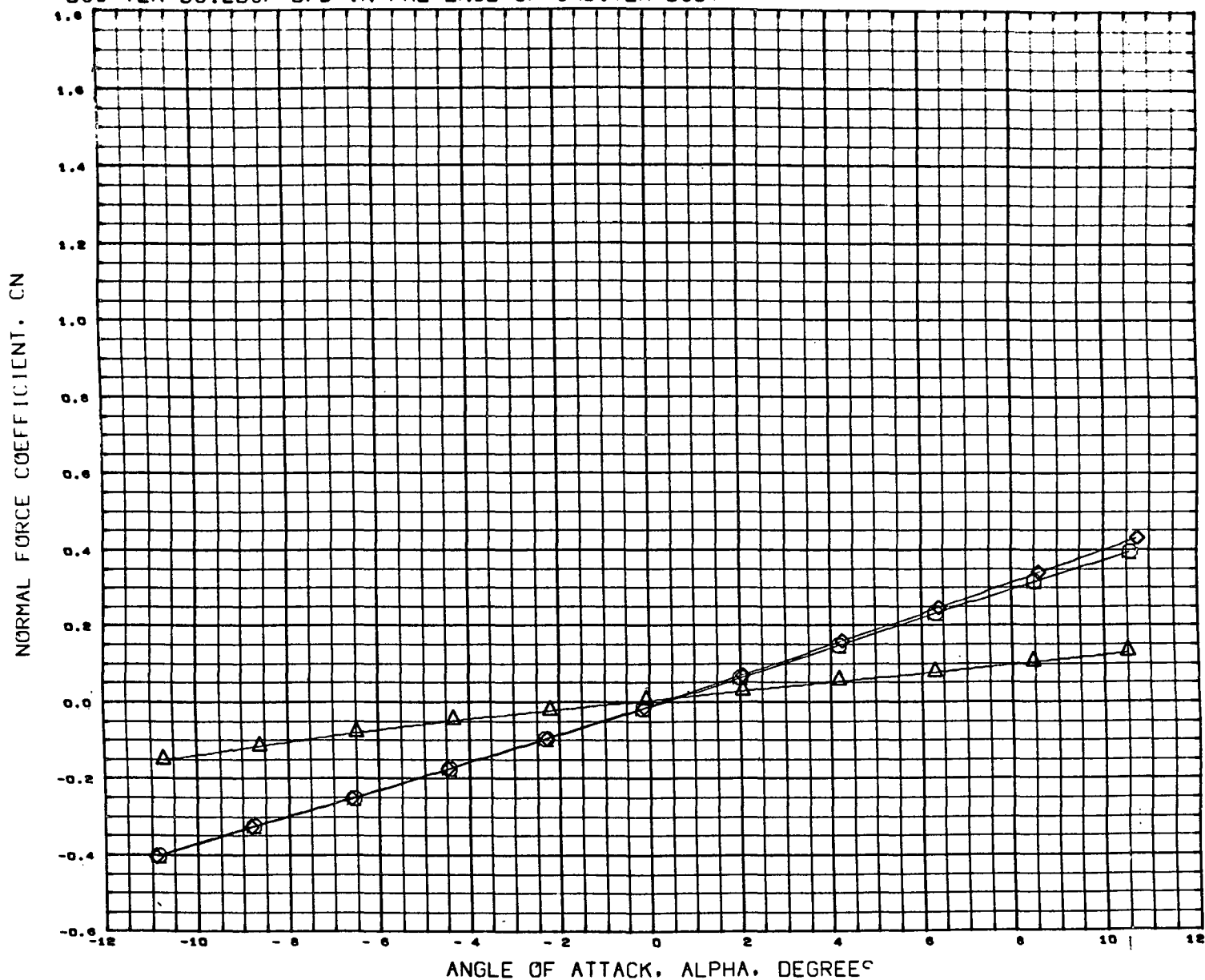
BOOASTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.457

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION

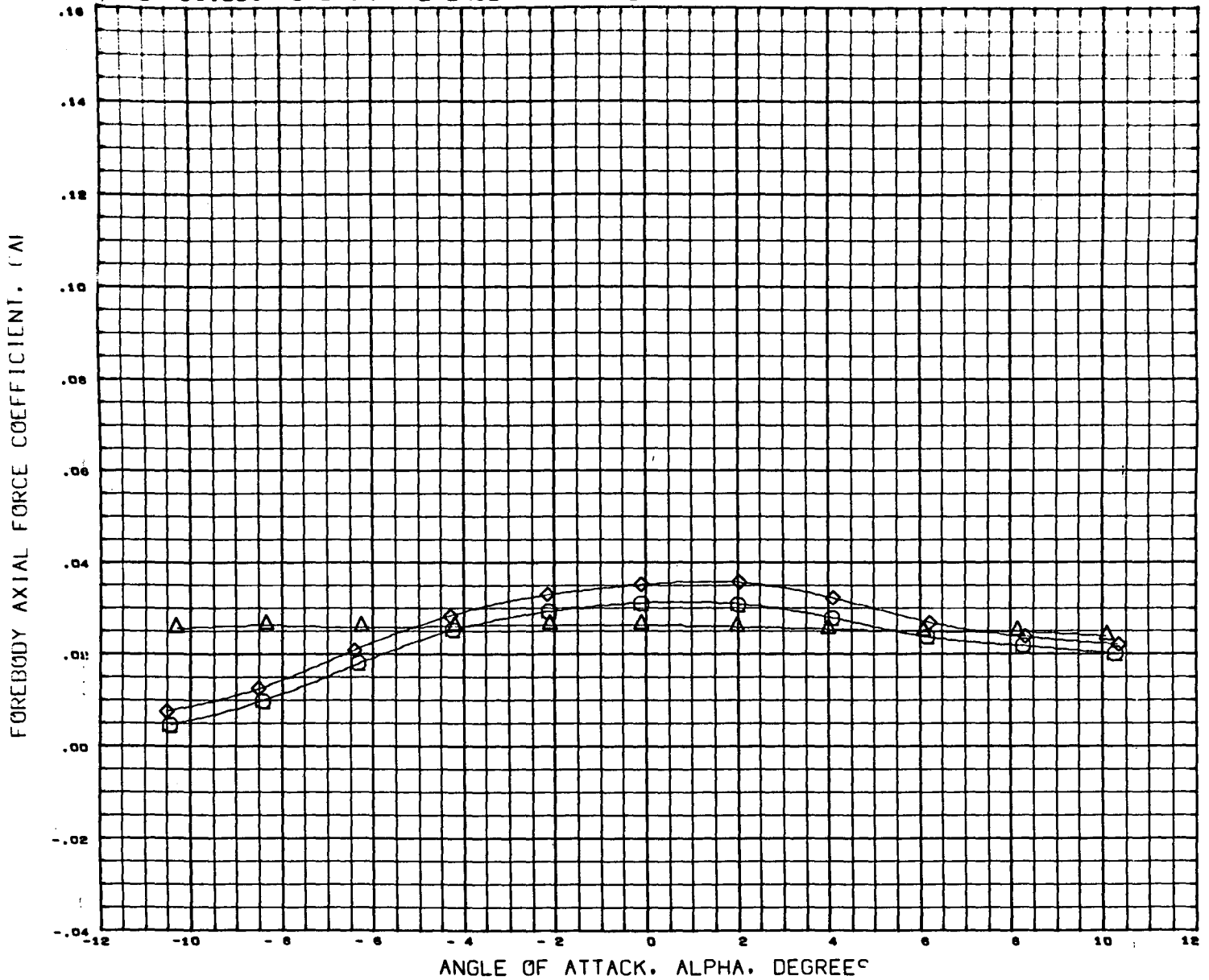
(H3245A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3247A) MSFC490 NR/GD LAUNCH B20C4BW14+B5

BETA CANARD ORBINC POSITN
 0.000 0.000 0.000 4.000
 0.000 0.000 0.000 4.000
 0.000 0.000 0.000 4.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.956

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

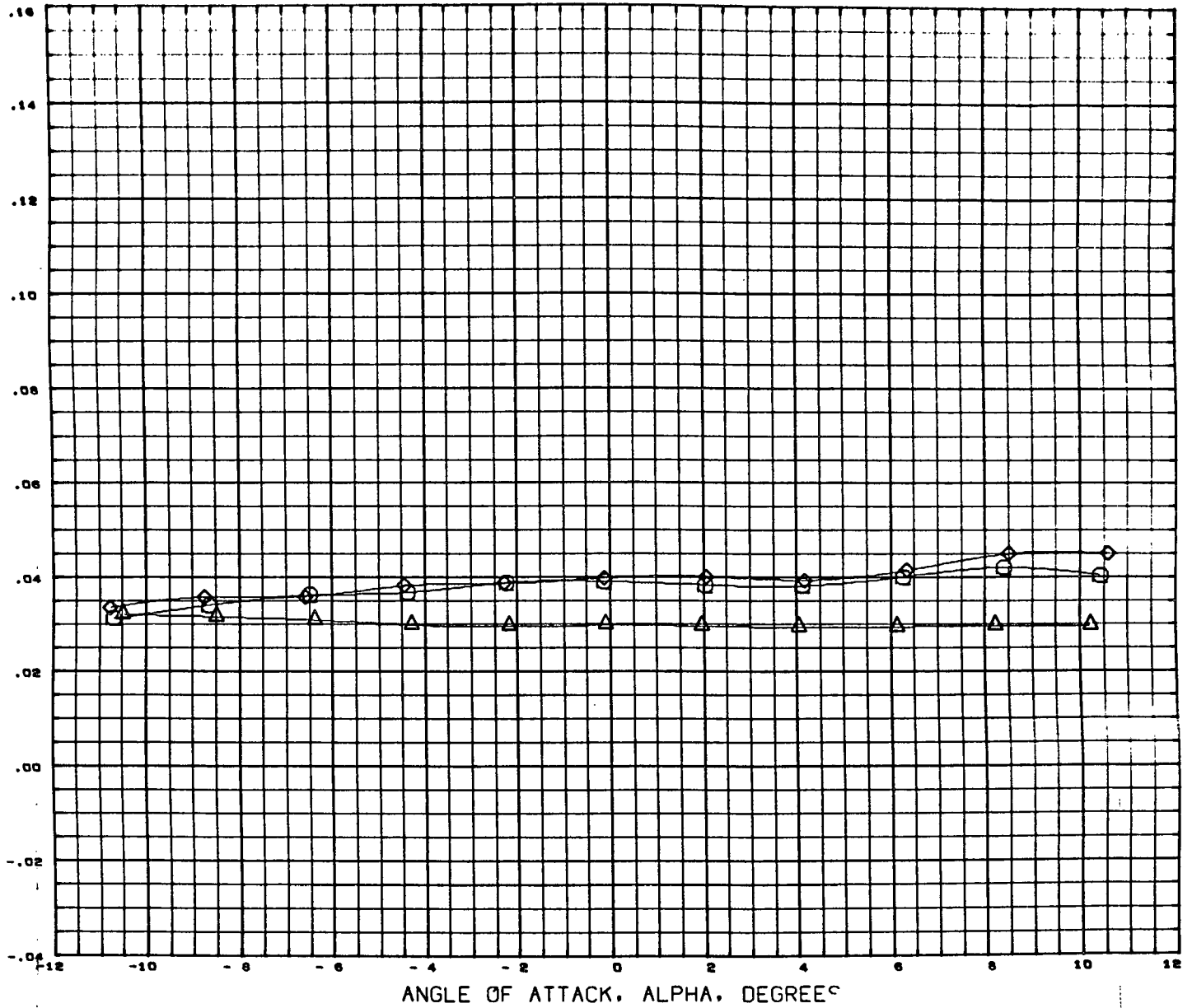


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|------------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4B+W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

FOREBODY AXIAL FORCE COEFFICIENT, CAF



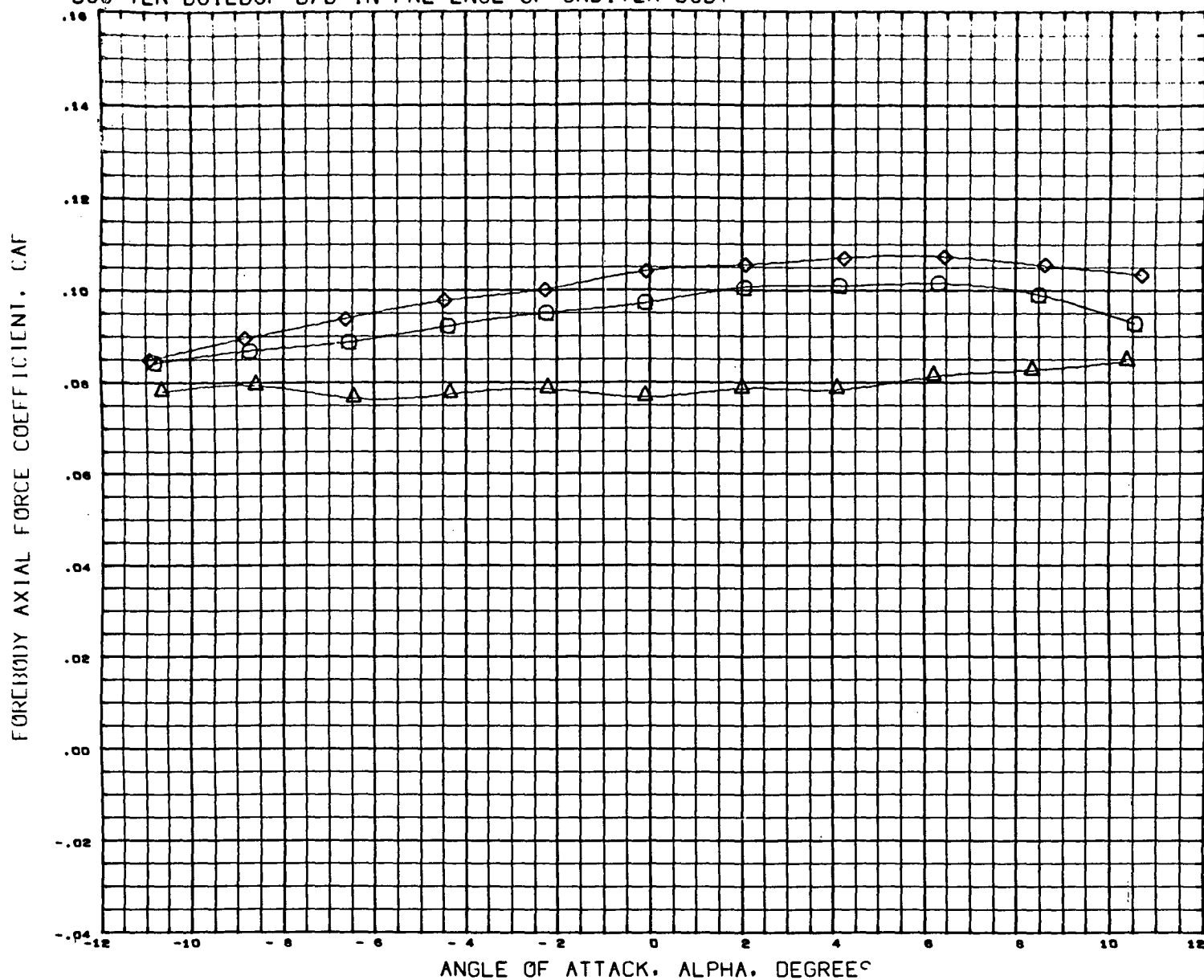
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.900

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

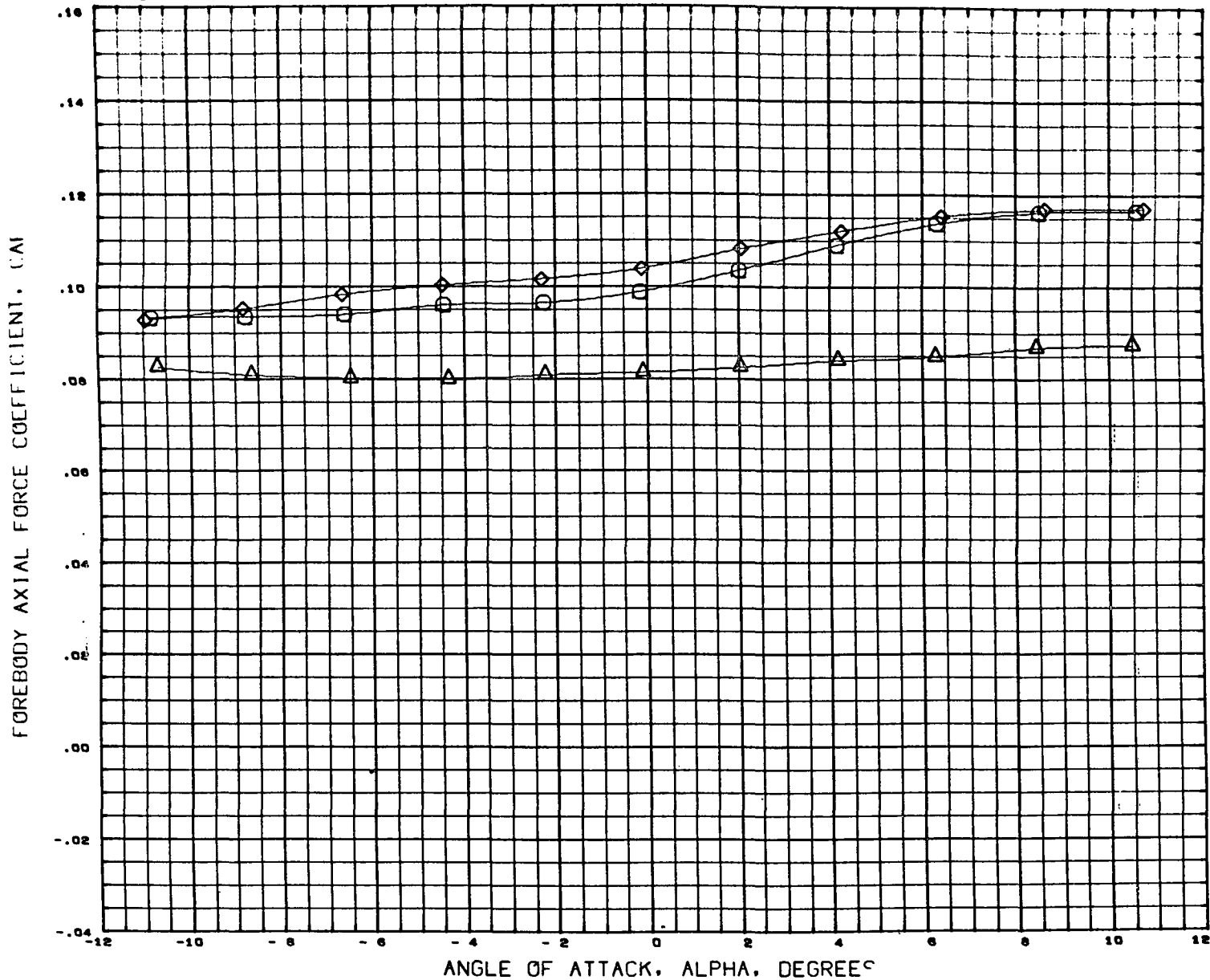


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C48+B5 |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C48W14+B5 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.096

BOOSTER BUILDUP B/B IN PRE^{SEN}CE OF ORBITER BODY



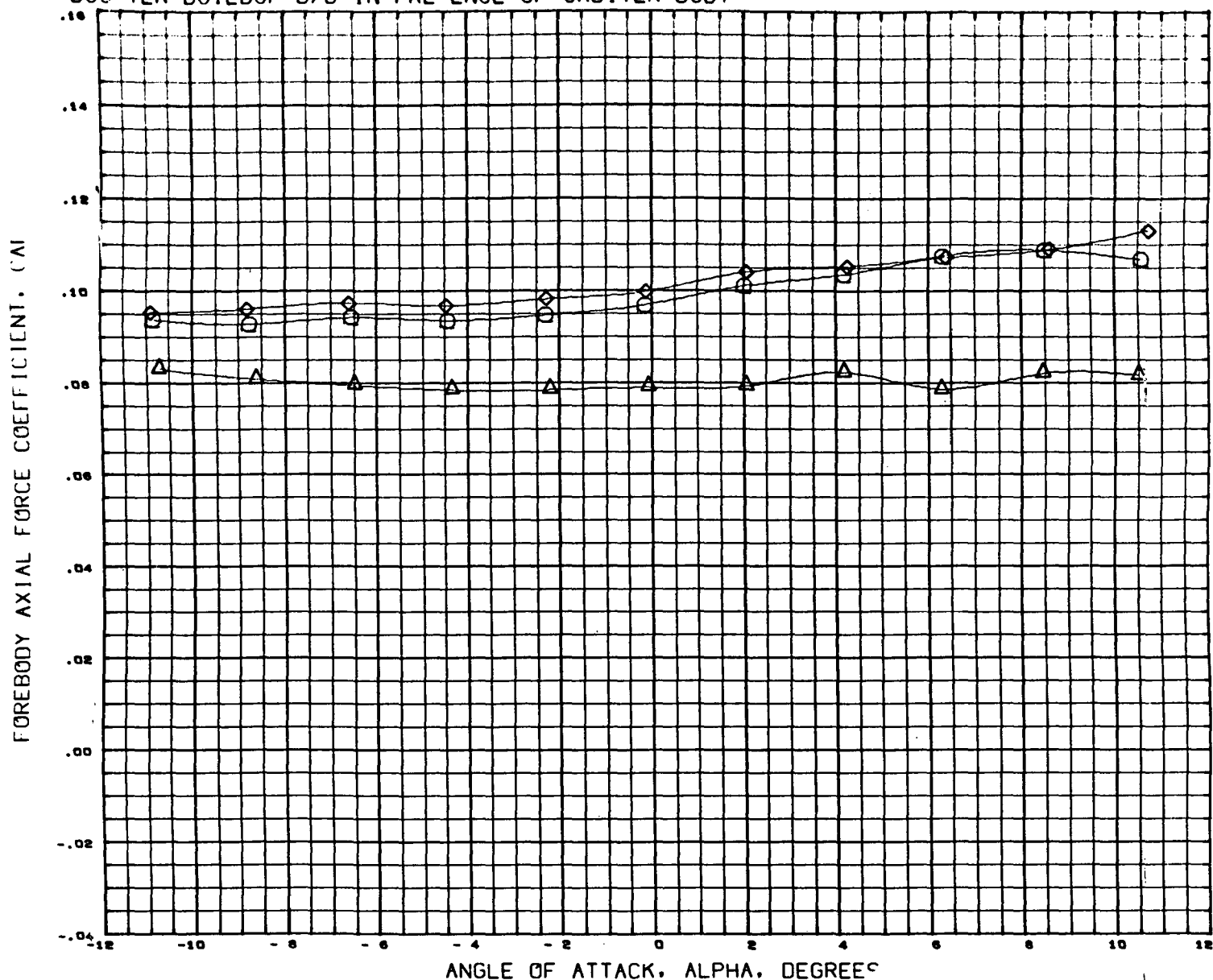
DATA SET SYMBOL CONFIGURATION DESCRIPTION
(H3245A) MSFC490 NR/GD LAUNCH B20W14+B5
(H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5
(H3247A) MSFC490 NR/GD LAUNCH B20C4BW14+B5

BETA CANARD ORBINC POSITN
0.000 0.000 0.000 4.000
0.000 0.000 0.000 4.000
0.000 0.000 0.000 4.000

REFERENCE INFORMATION
SREF 15.6560 SQ IN
LREF 3.0950 INCHES
BREF 6.0990 INCHES
XMRP 0.0000
YMRP 0.0000
ZMRP 0.0000
SCALE 0.0035 SCALE

MACH 1.457

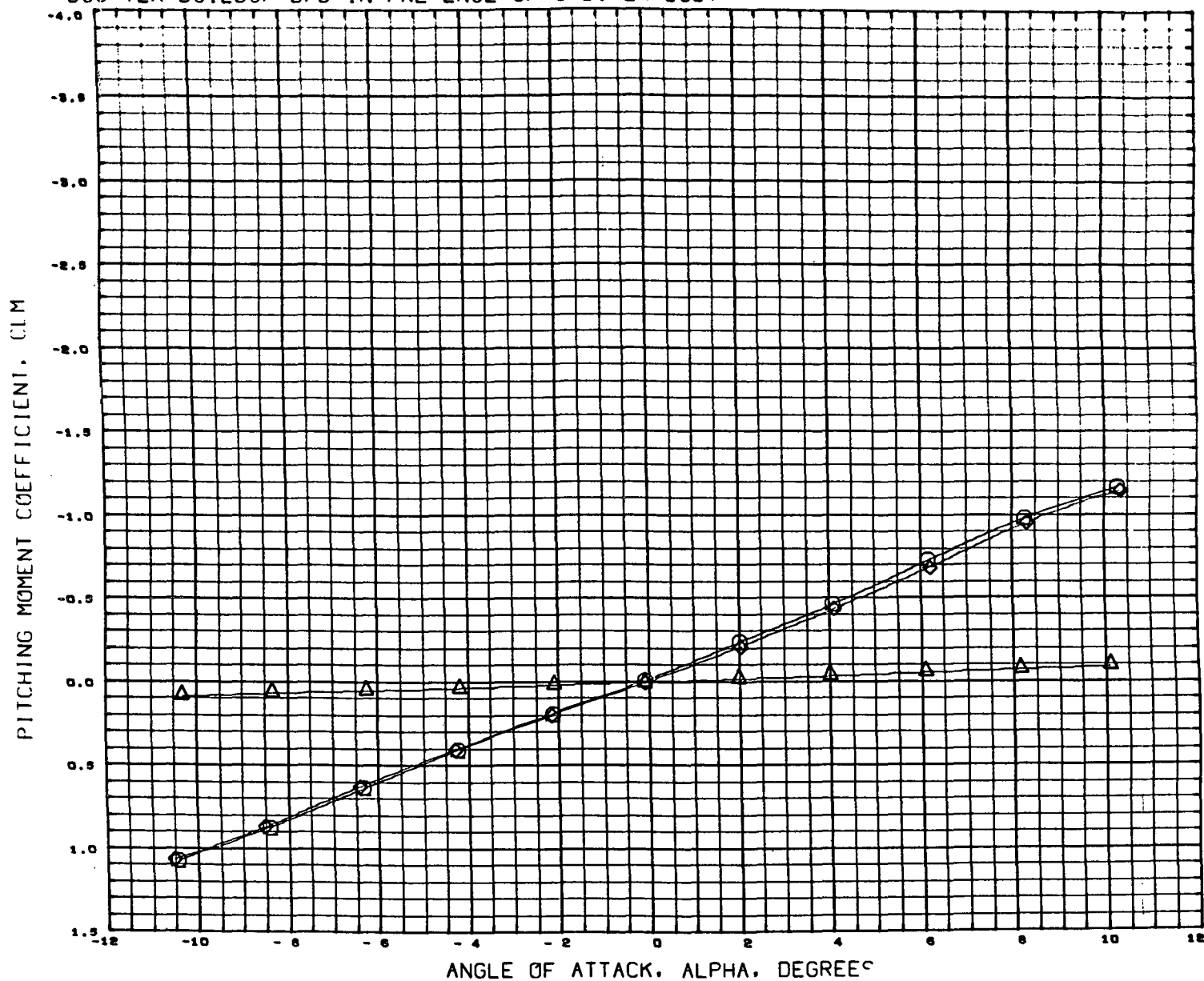
BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.956

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



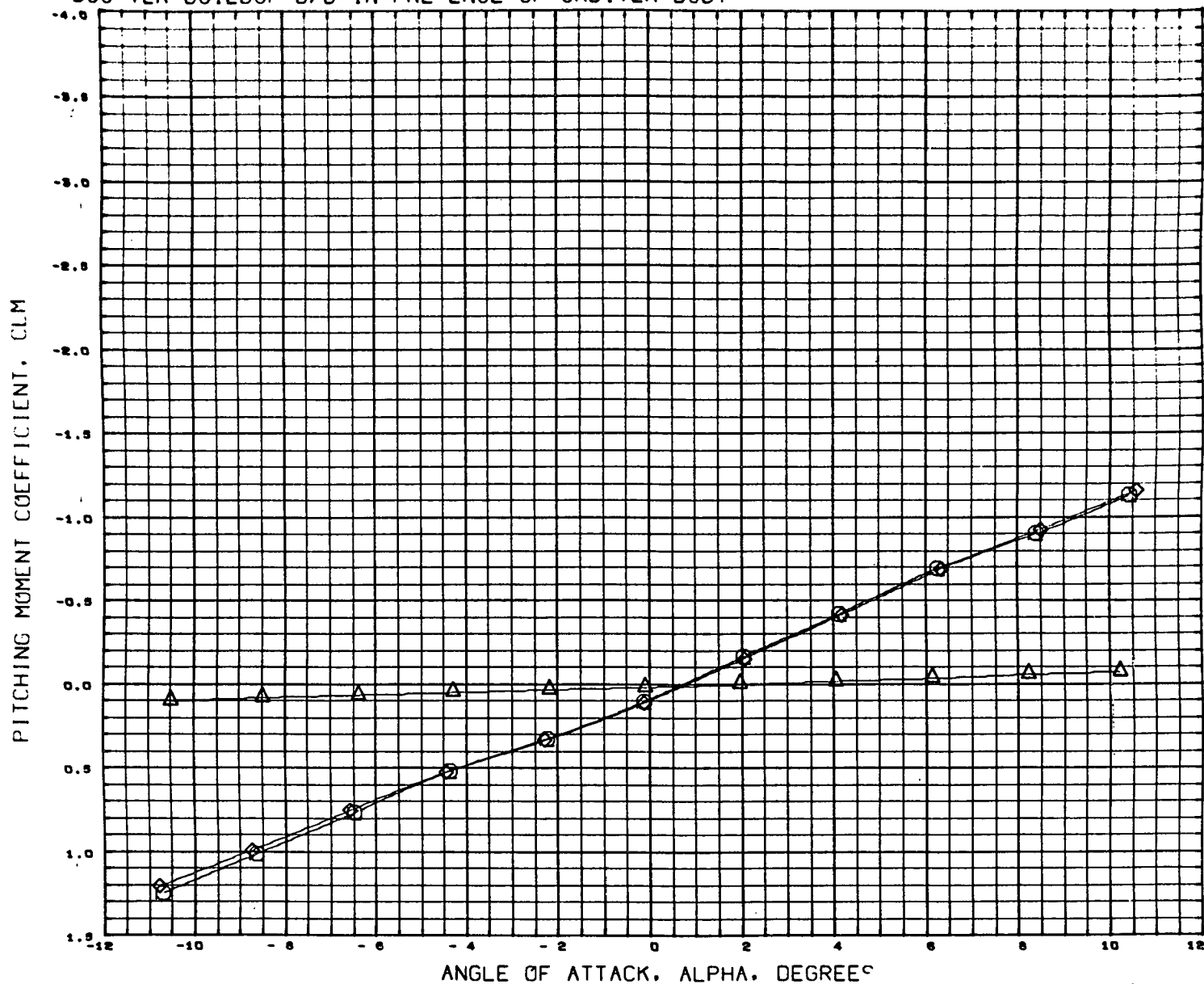
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.600

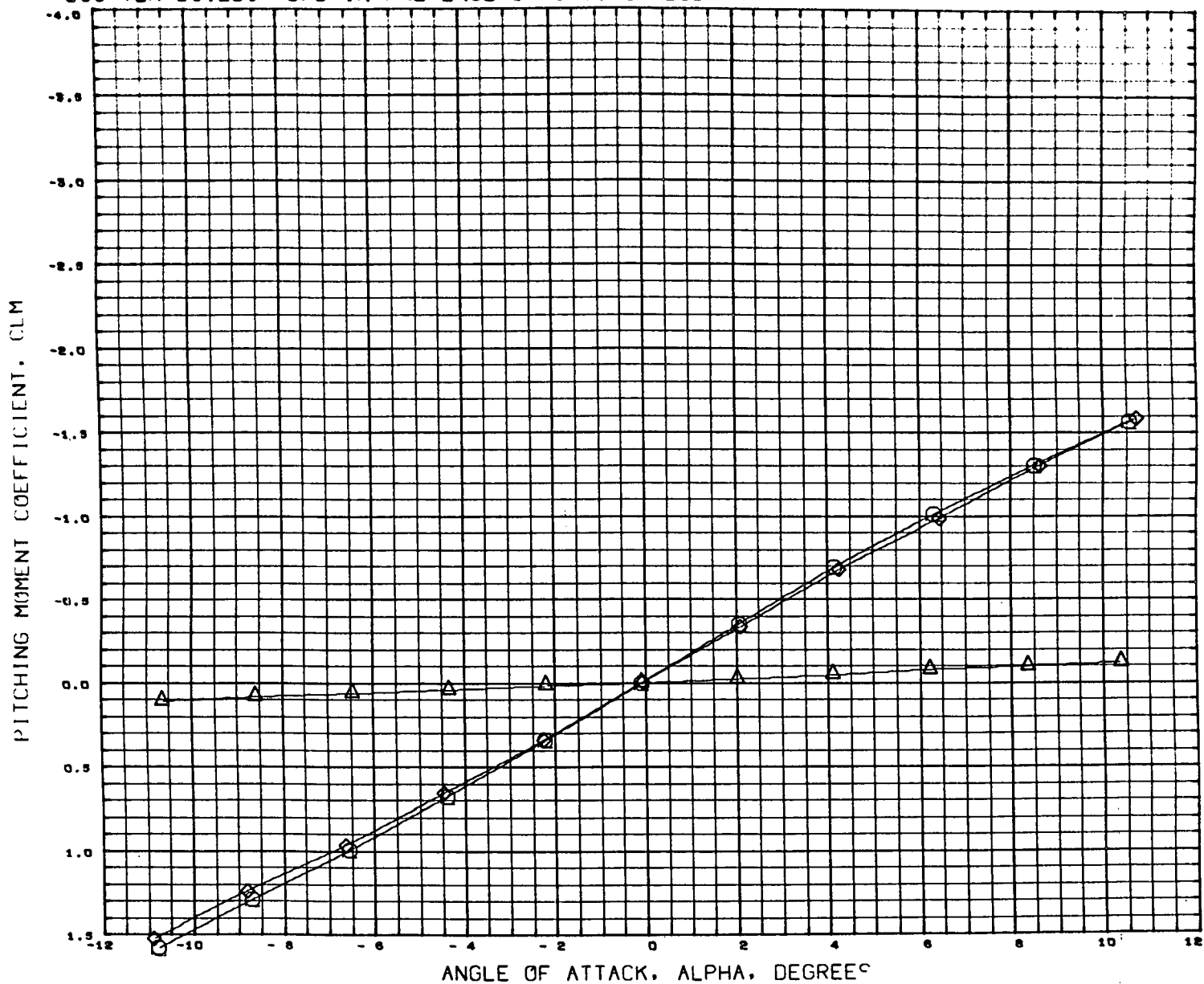
BOOSTER BUILDUP B/B IN PRE^{SEN}CE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 13.6360 SQ IN |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

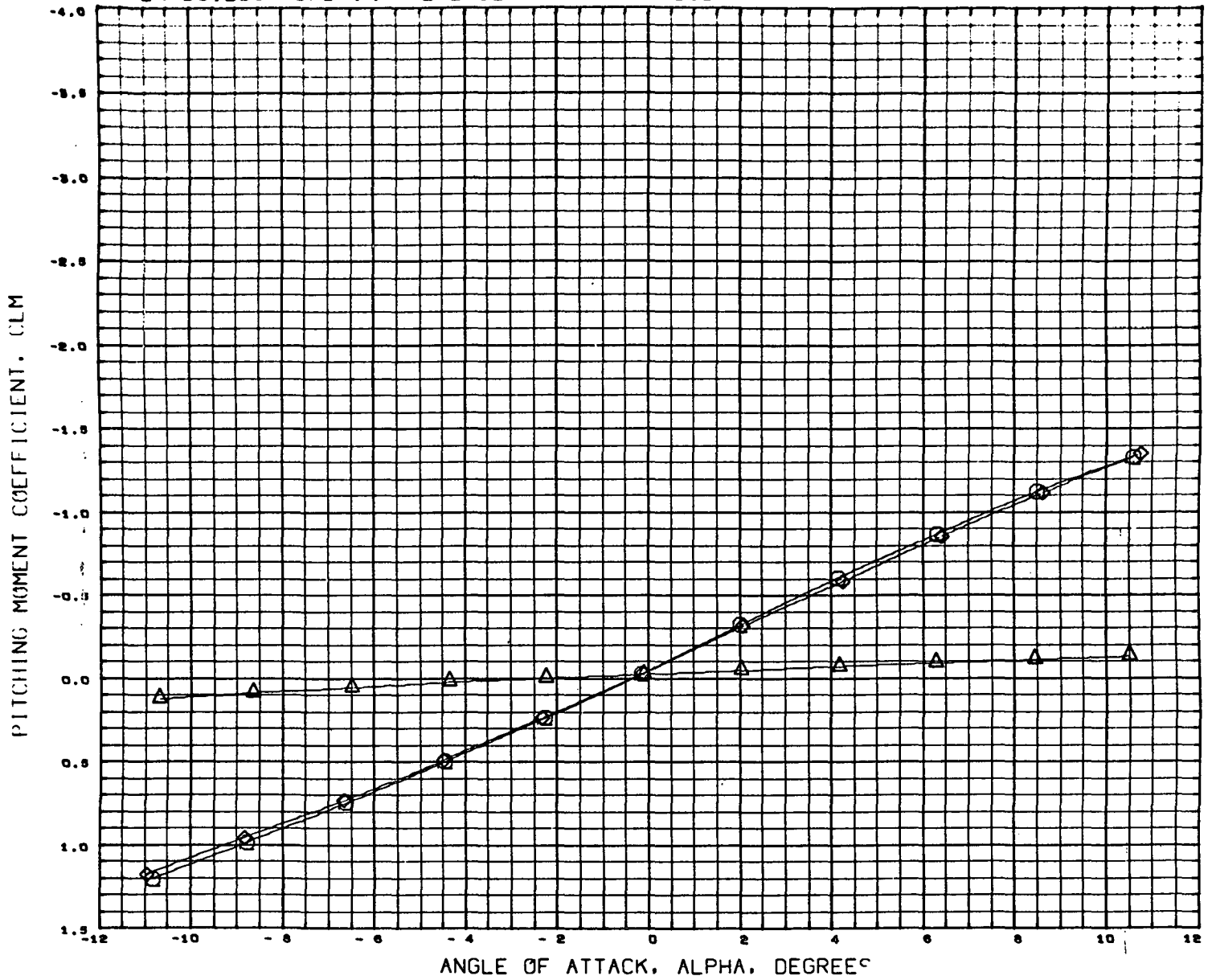
BOOSTER BUILDUP B/B IN PRE^{SEN}CE OF ORBITER BODY



| DATA SET SYMBOL | | CONFIGURATION DESCRIPTION | | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | | |
|-----------------|---|---------------------------|--------------|-------|--------|--------|--------|-----------------------|---------|--------|
| (H3245A) | ○ | MSFC490 NR/GD LAUNCH | B20W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 | Sq IN |
| (H3249A) | △ | MSFC490 NR/GD LAUNCH | B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 | INCHES |
| (H3247A) | ◇ | MSFC490 NR/GD LAUNCH | B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 | INCHES |
| | | | | | | | | XMRP | 0.0000 | |
| | | | | | | | | YMRP | 0.0000 | |
| | | | | | | | | ZMRP | 0.0000 | |
| | | | | | | | | SCALE | 0.0035 | SCALE |

MACH 1.096

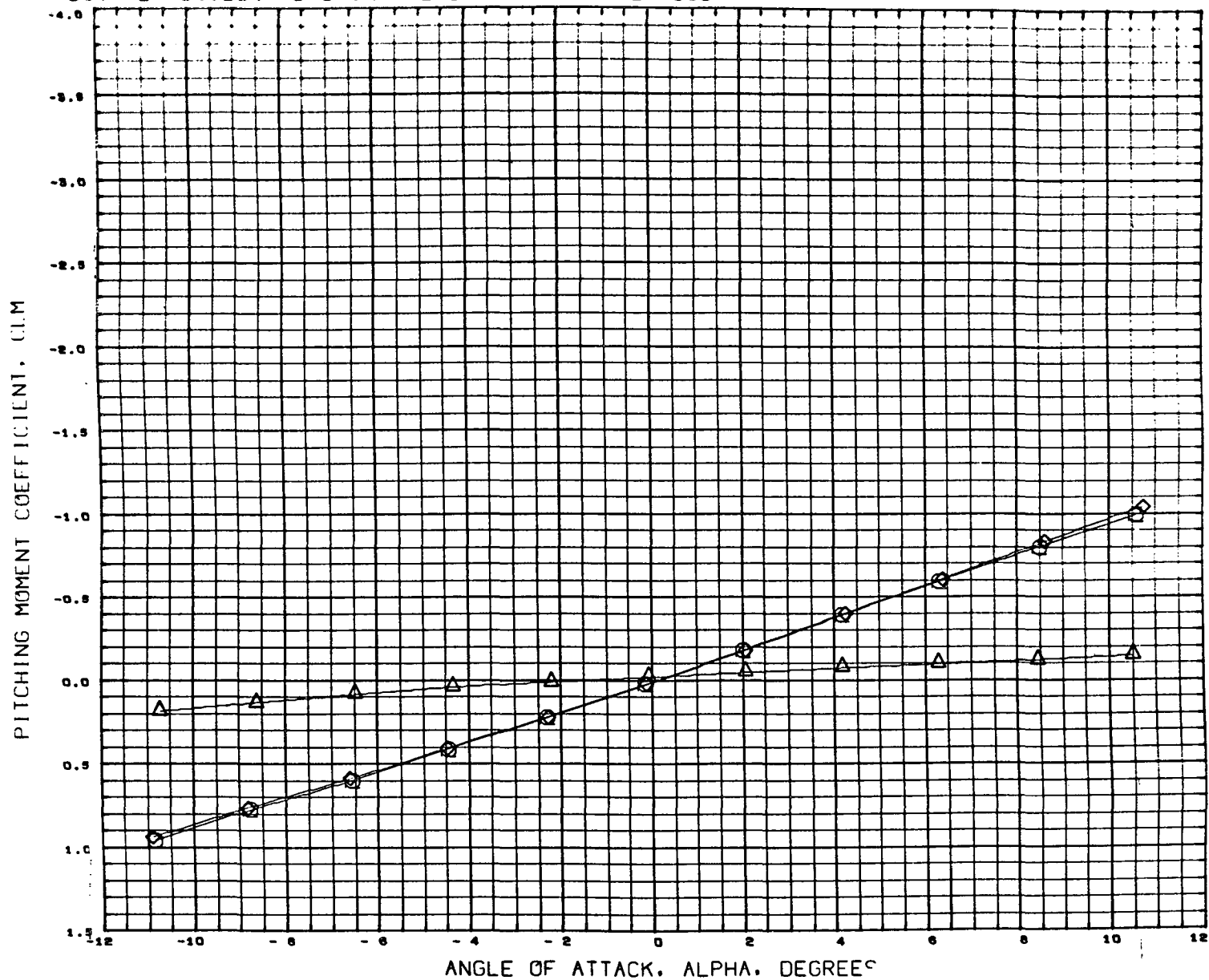
BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------|--------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 | 90 IN |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 | INCHES |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 | INCHES |
| | | | | | | XMRP | 0.0000 | |
| | | | | | | YMRP | 0.0000 | |
| | | | | | | ZMRP | 0.0000 | |
| | | | | | | SCALE | 0.0035 | SCALE |

MACH 1.457

BOOASTER BUILDUP E/E IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|------------------------------------|
| (H3245A) ○ | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3249A) △ | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3247A) ◇ | MSFC490 NR/GD LAUNCH B20C4B+W14+B5 |

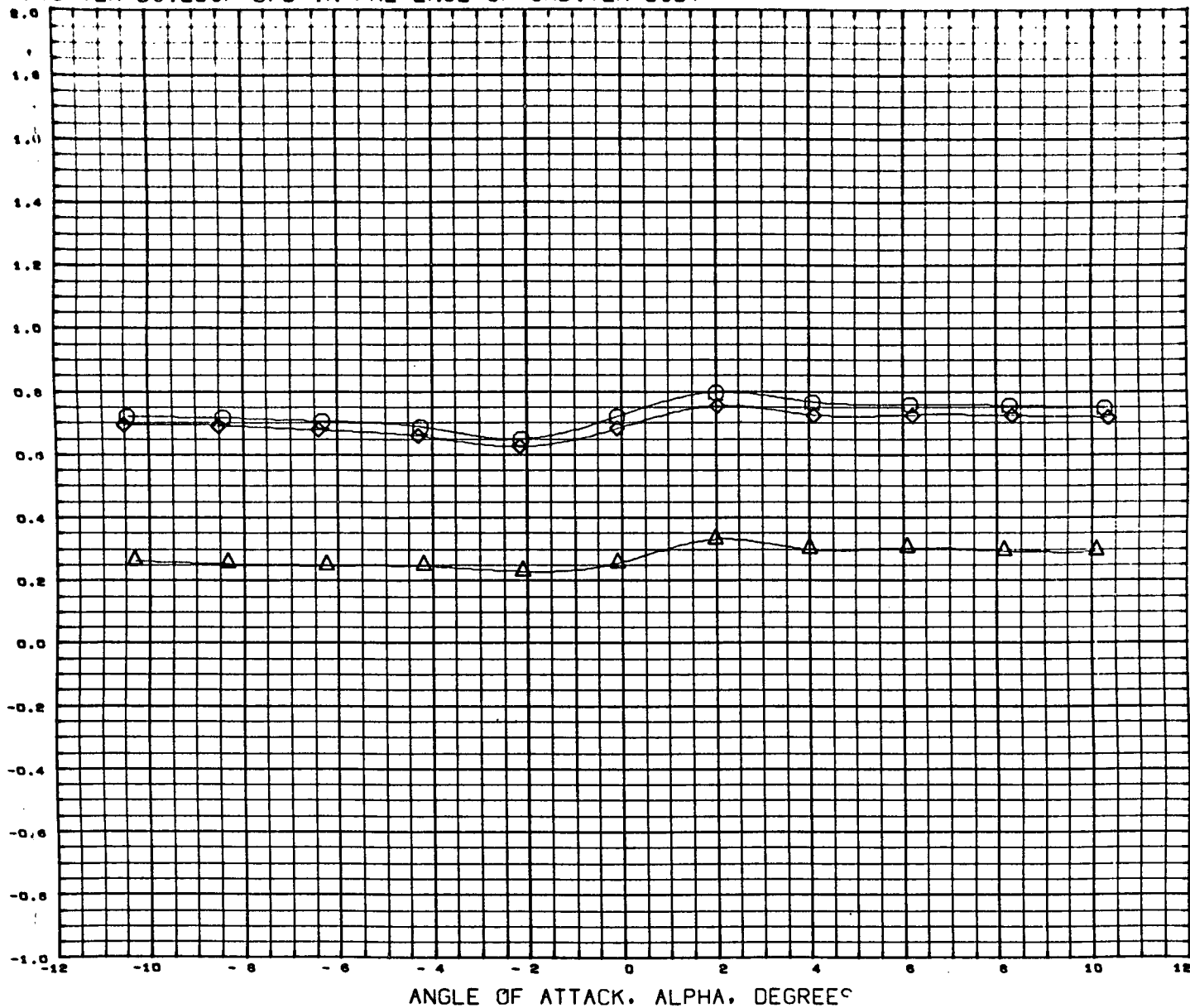
| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.956

BOOSTER BUILDUP 8/B IN PRESENCE OF ORBITER BODY

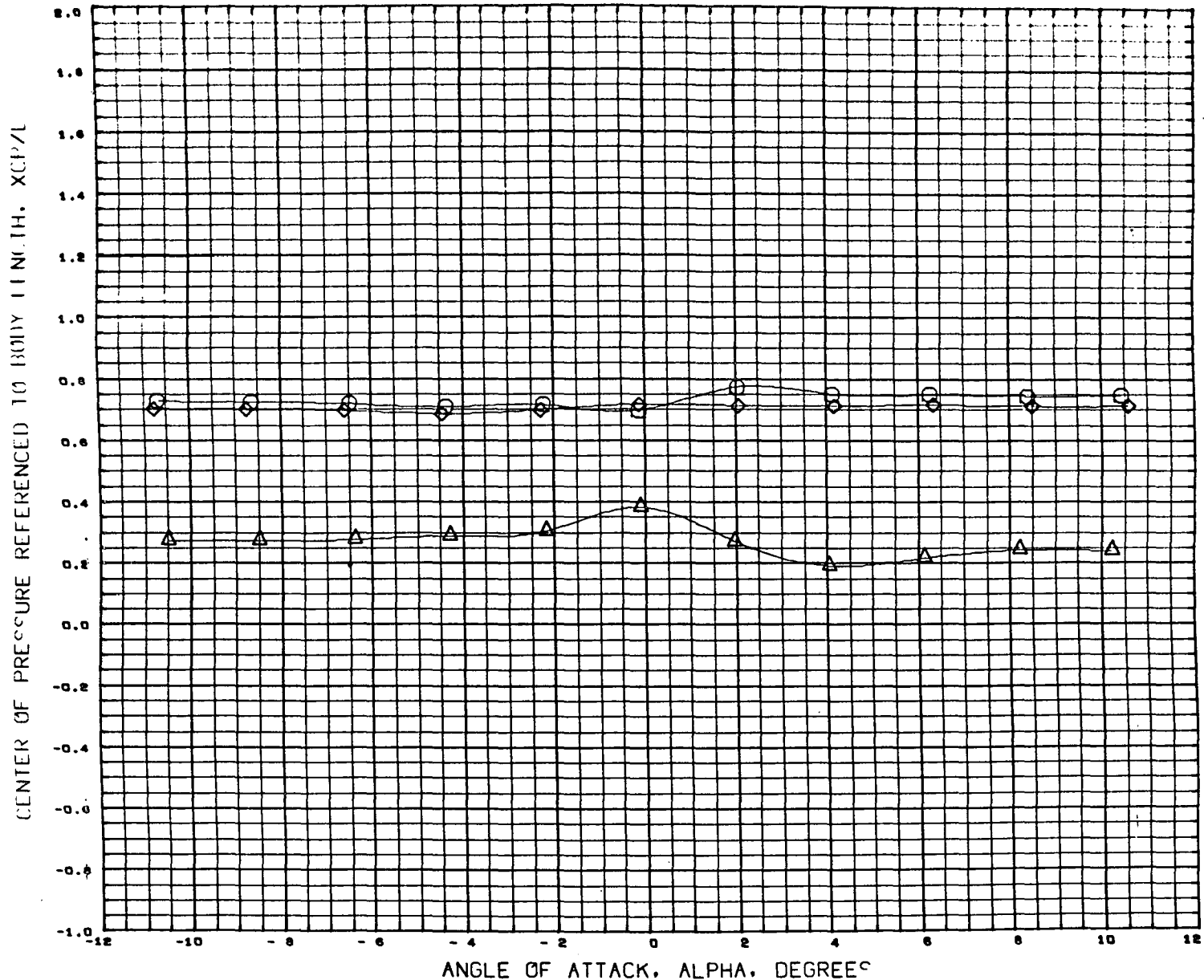
CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.000

BOOASTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

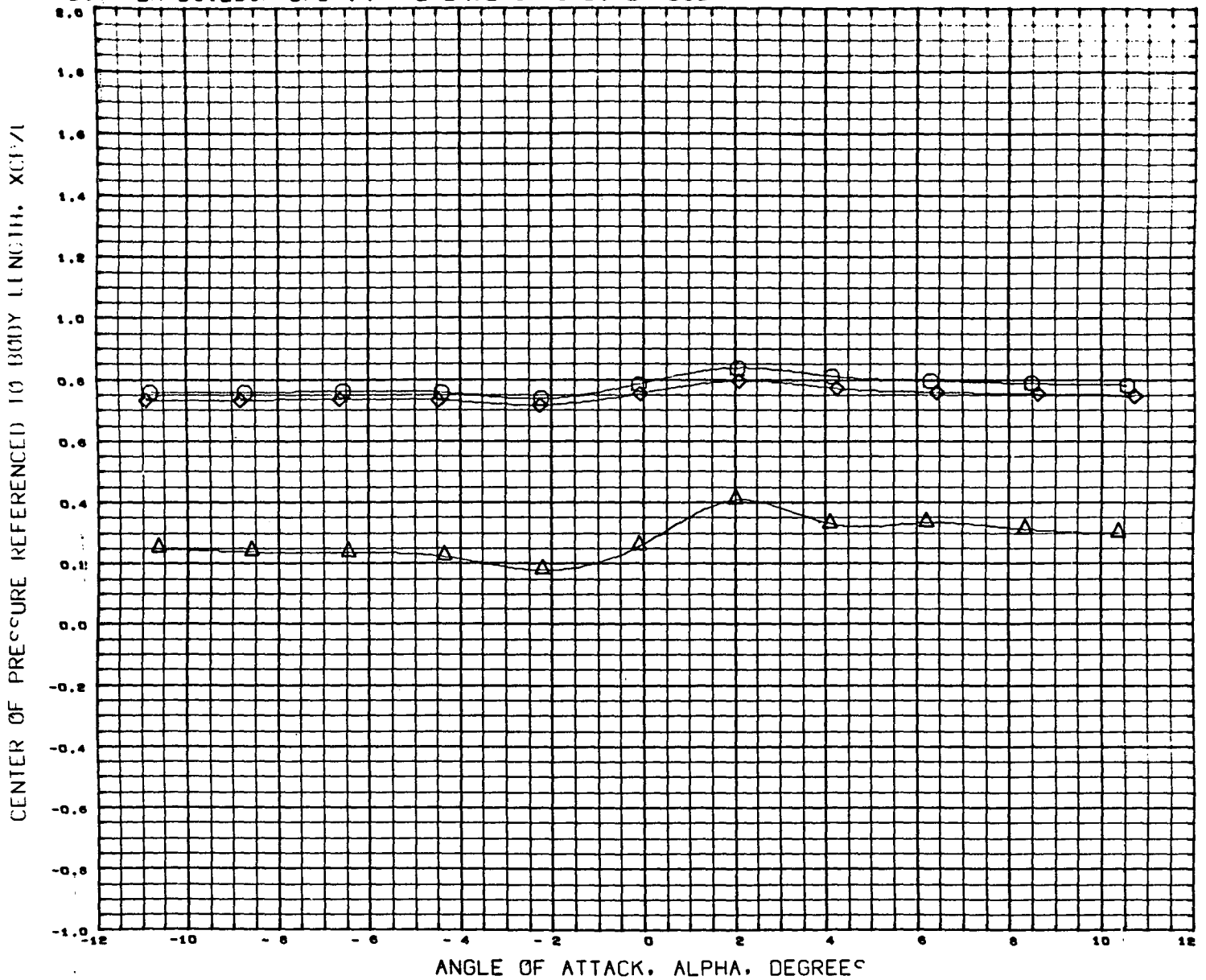


DATA SET SYMBOL CONFIGURATION DESCRIPTION
(H3245A) MSFC490 NR/GD LAUNCH B20W14+B5
(H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5
(H3247A) MSFC490 NR/GD LAUNCH B20C4BW14+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.900

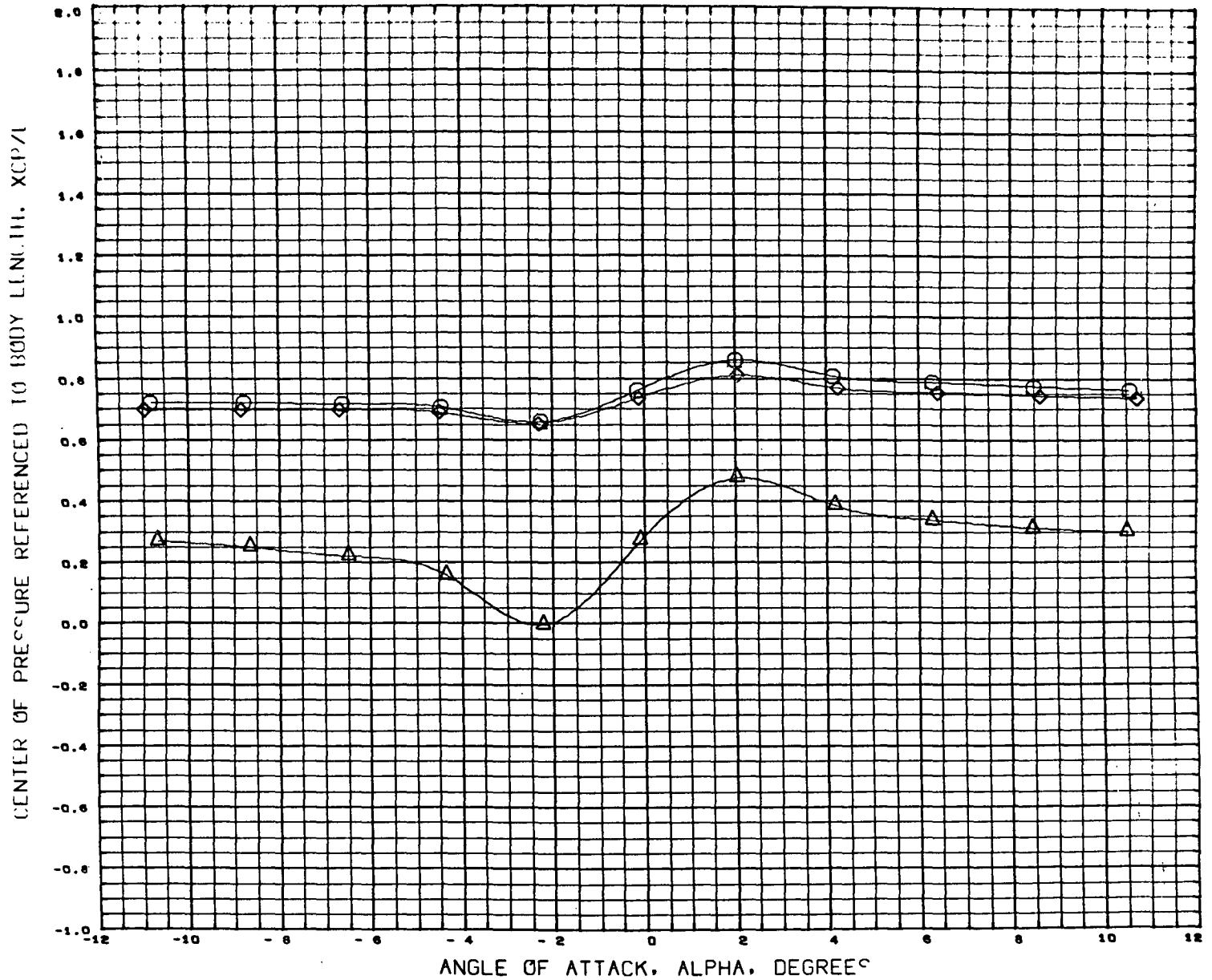
BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C48+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C48W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.096

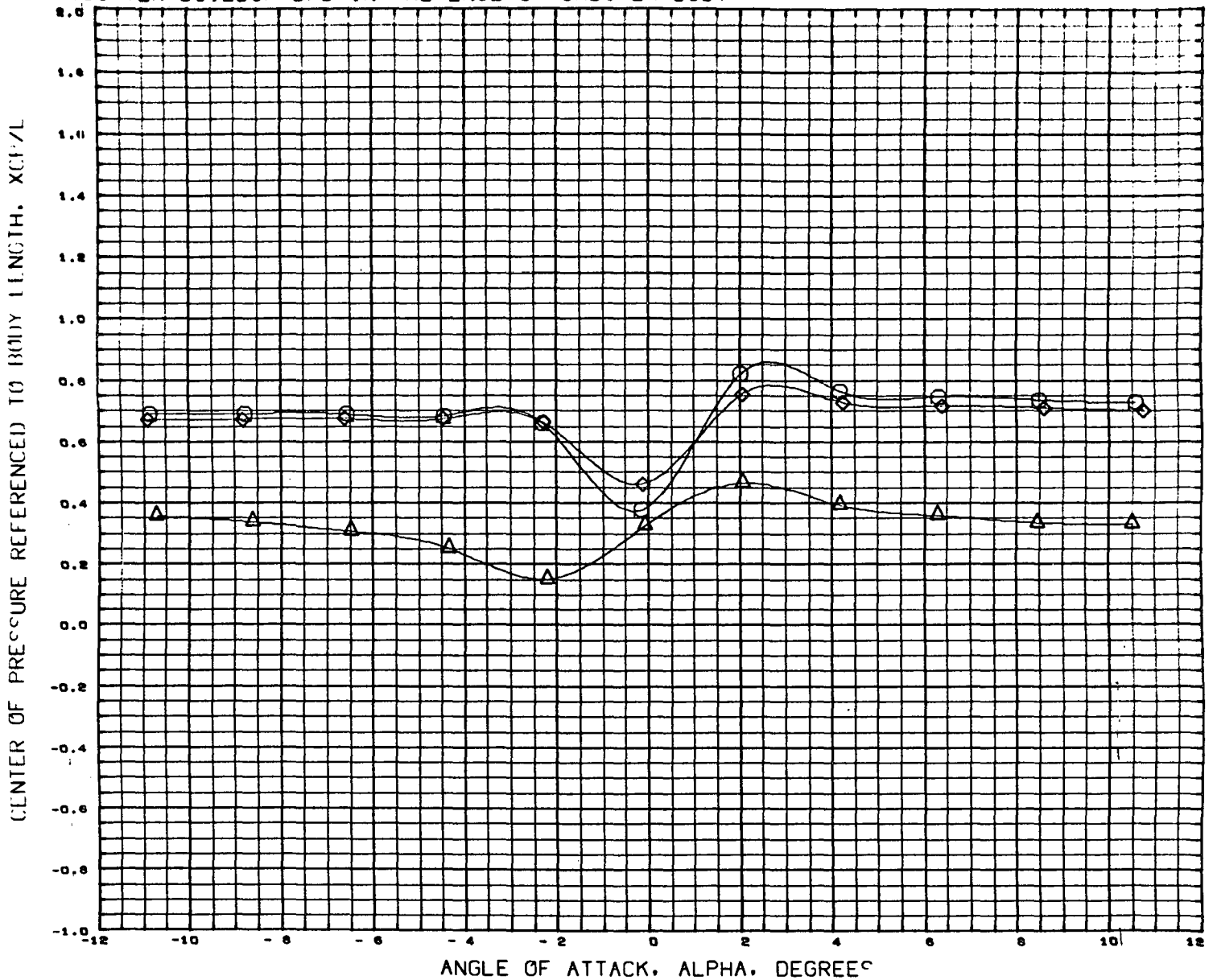
BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.457

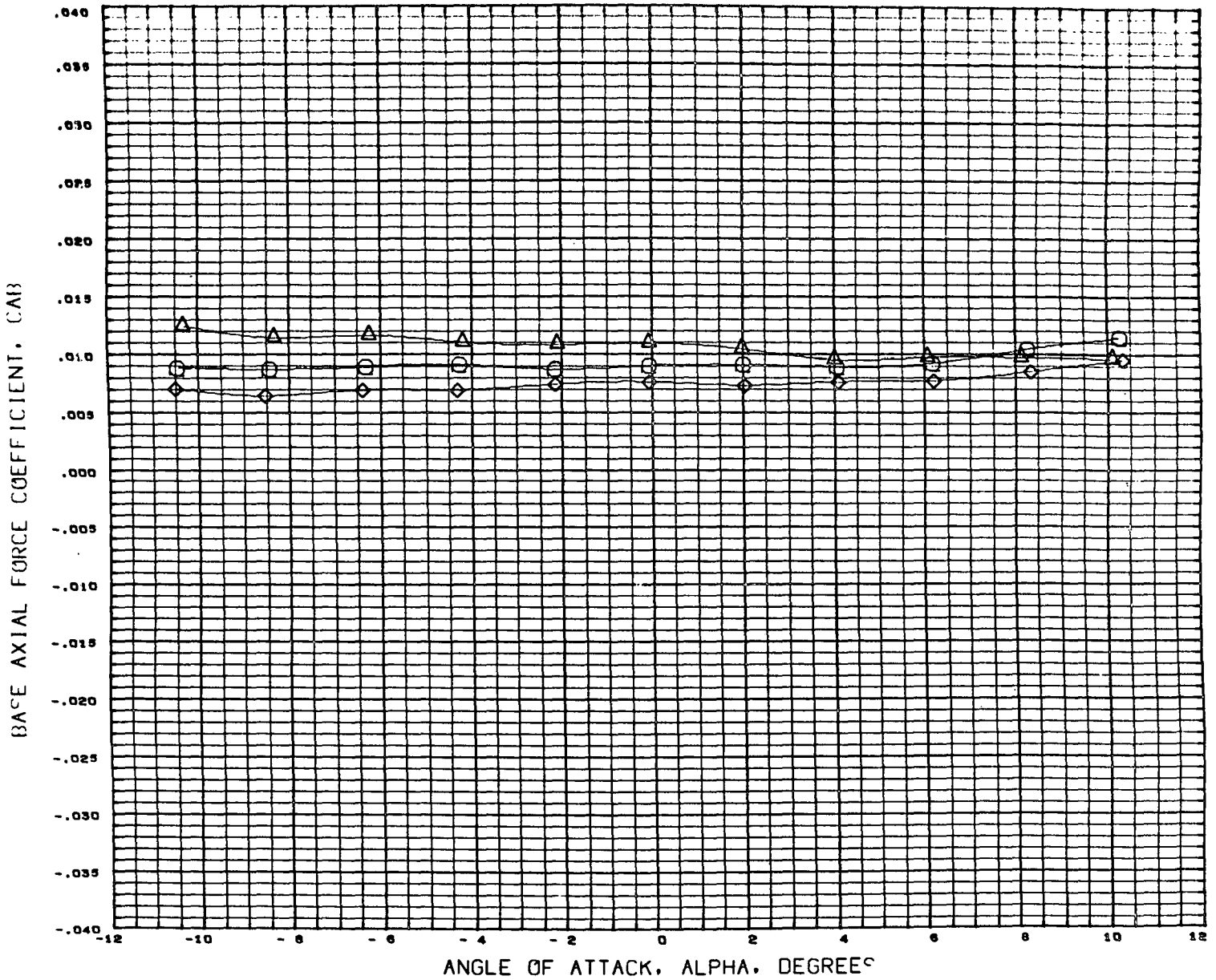
BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.956

BOOSTER BUILDUP B/B IN PRE^{SEN}CE OF ORBITER BODY



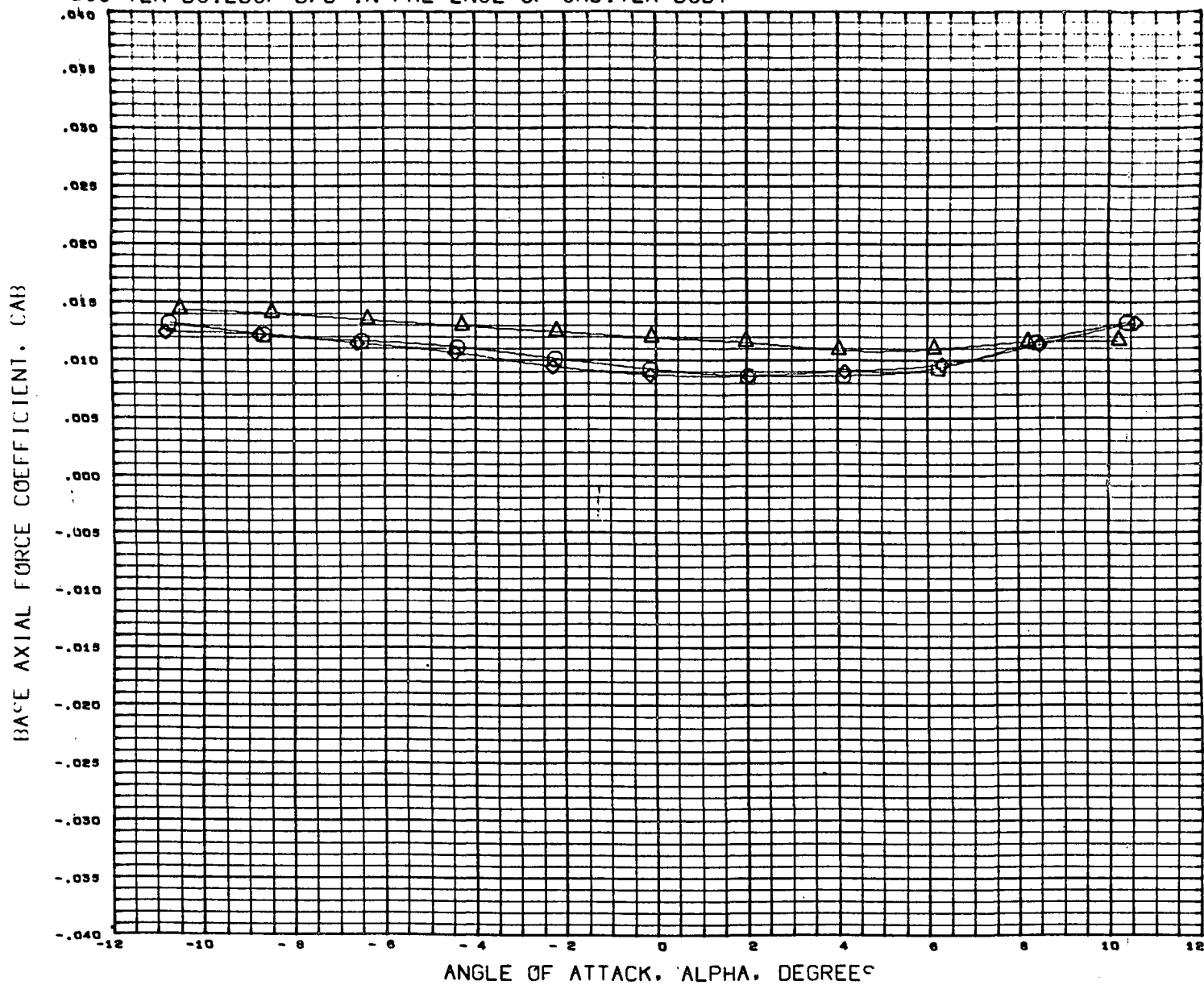
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.600

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

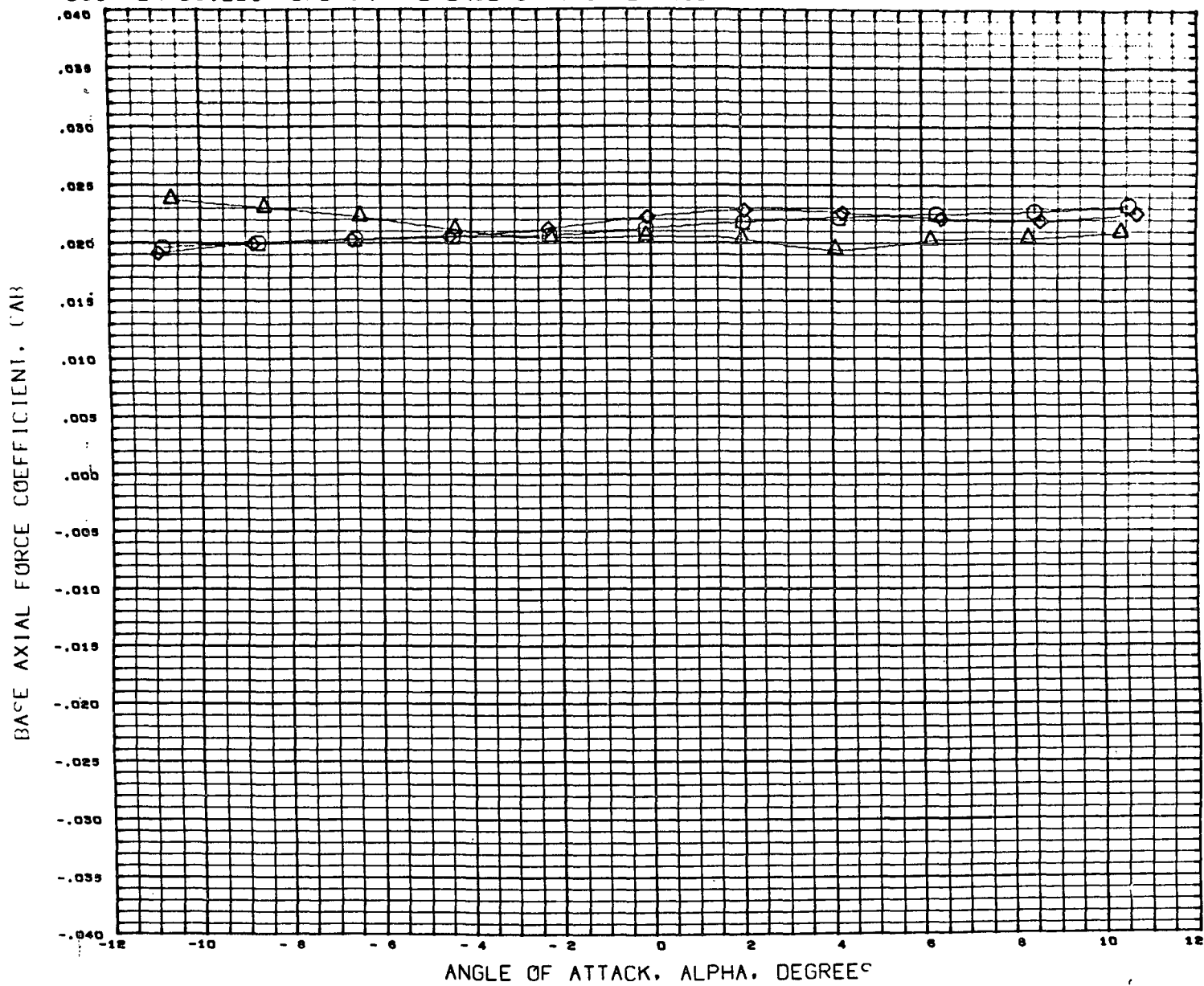


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | | 0.000 | 4.000 | SREF 15.6360 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0990 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.900

BOOSTER BUILDUP B/B IN PRE^{SEN}CE OF ORBITER BODY



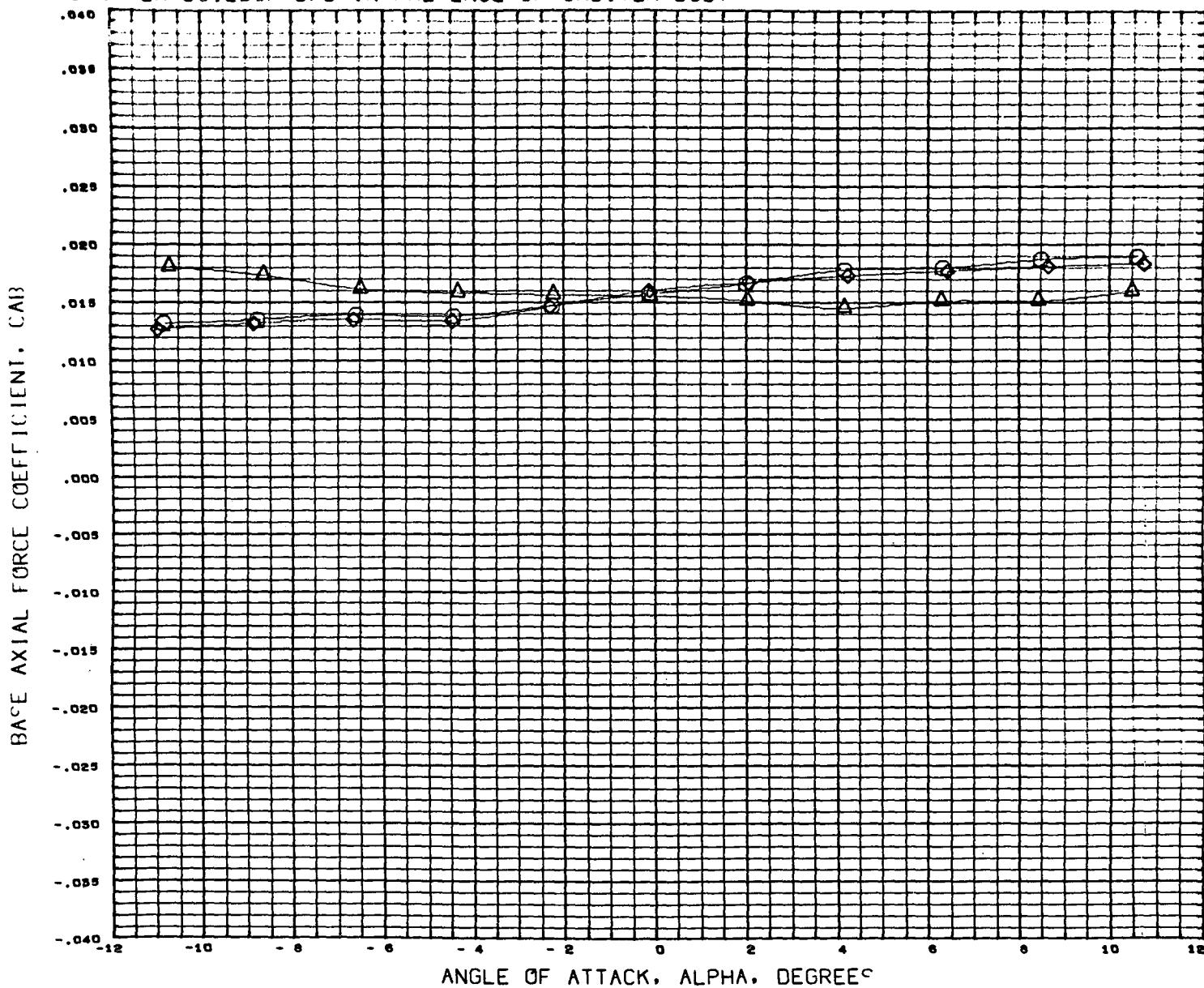
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.096

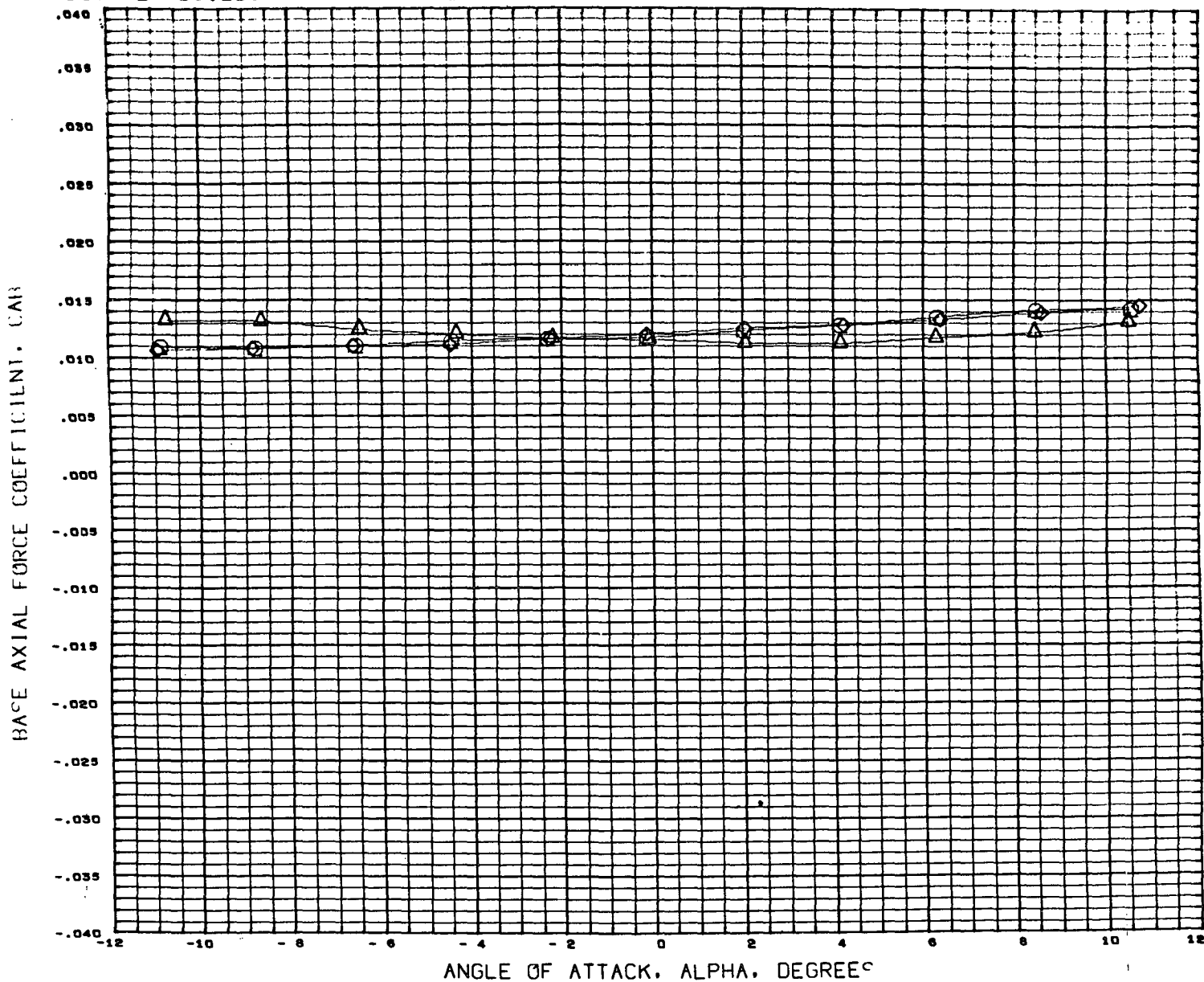
BOOSTER BUILDUP B/E IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (H3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (H3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.457

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



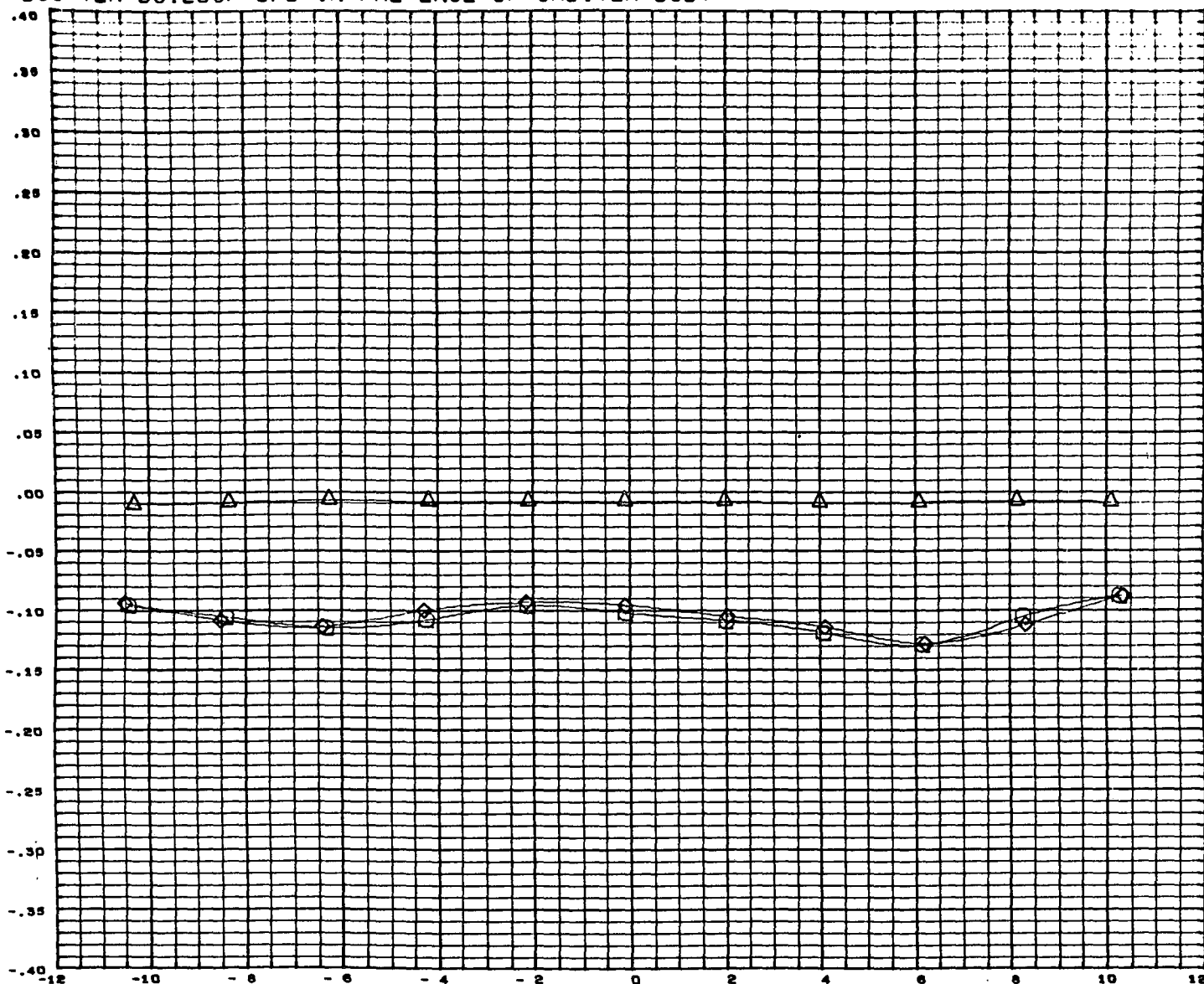
| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|----------|--------|-----------------------------------|
| (H3245A) | ○ | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3249A) | △ | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3247A) | ◇ | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.956

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE (CMALP (PER DEGREE))

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



ANGLE OF ATTACK, ALPHA, DEGREE

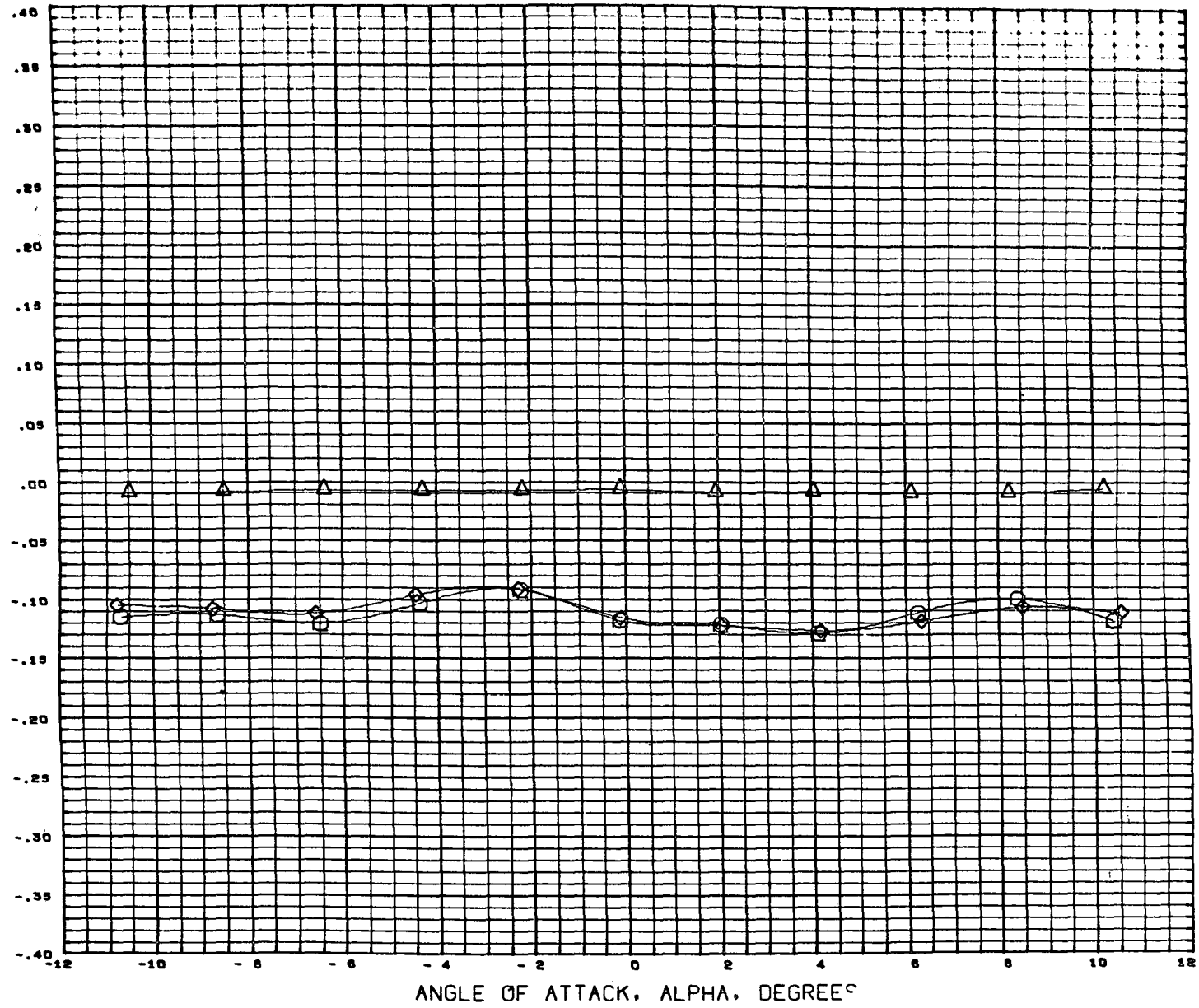
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13245A) ○ | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13249A) △ | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (13247A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.600

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMADP (PER DEGREE)

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

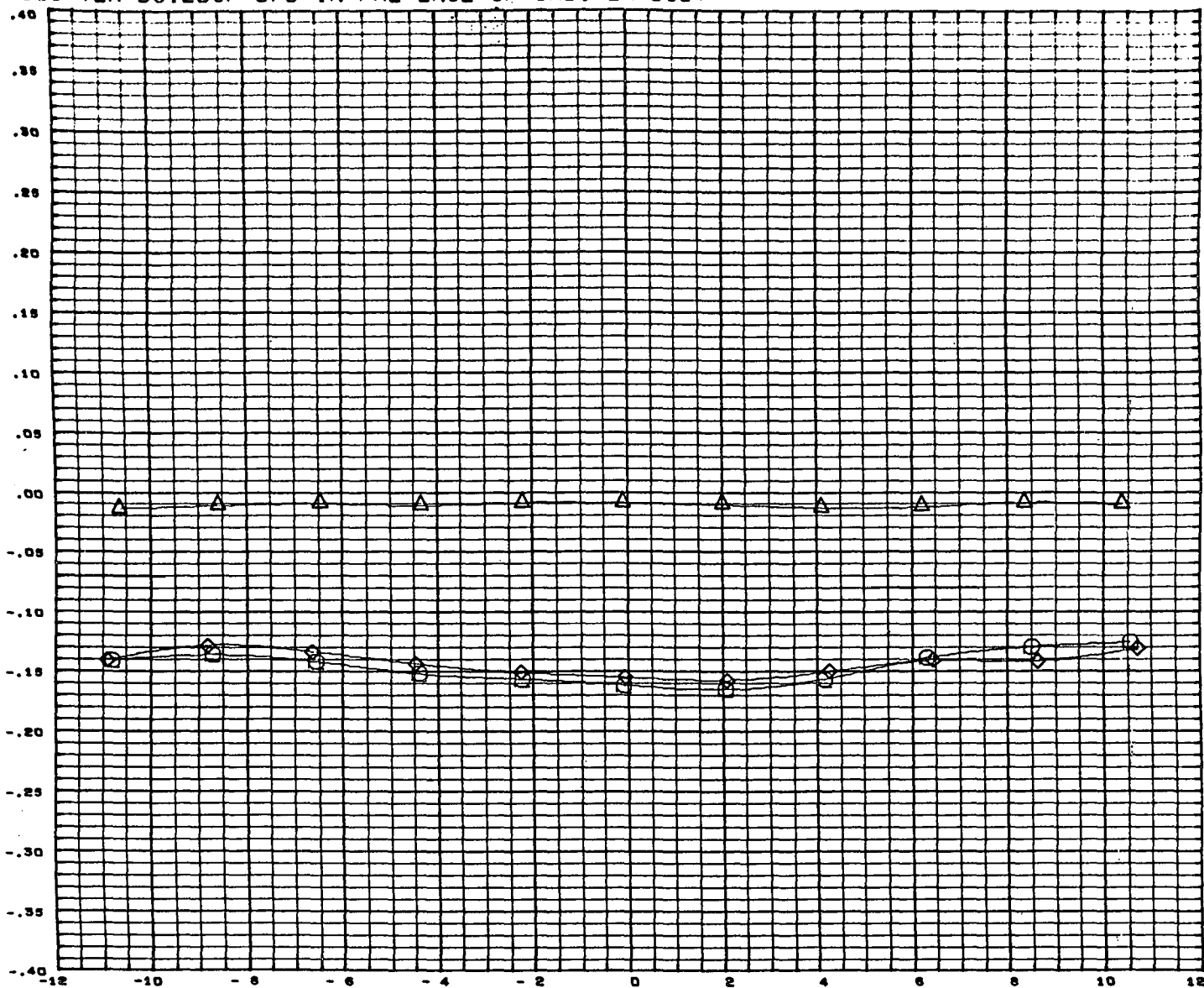


| DATA SET SYMBOL | | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|---|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (13245A) | ○ | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (13249A) | △ | MSFC490 NR/GD LAUNCH B20C48+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| (13247A) | ◇ | MSFC490 NR/GD LAUNCH B20C48W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | | XMRP | 0.0000 |
| | | | | | | | YMRP | 0.0000 |
| | | | | | | | ZMRP | 0.0000 |
| | | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - (CMALP (PER DEGREE))

BOOSTER BUILDUP B/B IN PRE^{SEN}CE OF ORBITER BODY

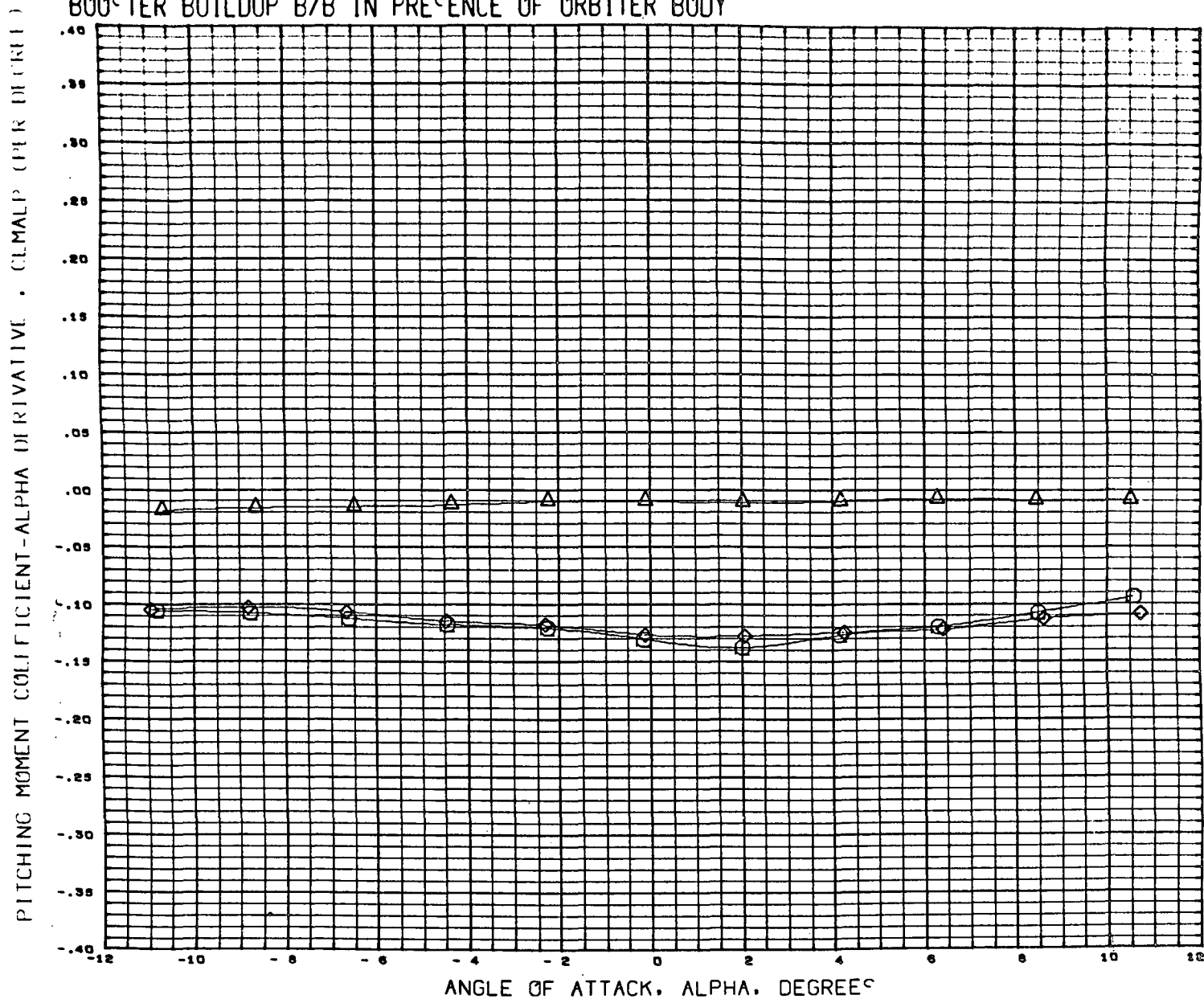


ANGLE OF ATTACK, ALPHA, DEGREE^S

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (13245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (13247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0950 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.096

BOOSTER BUILDUP B/B IN PRE^{SEN}CE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (13243A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0930 INCHES |
| (13247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.457

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

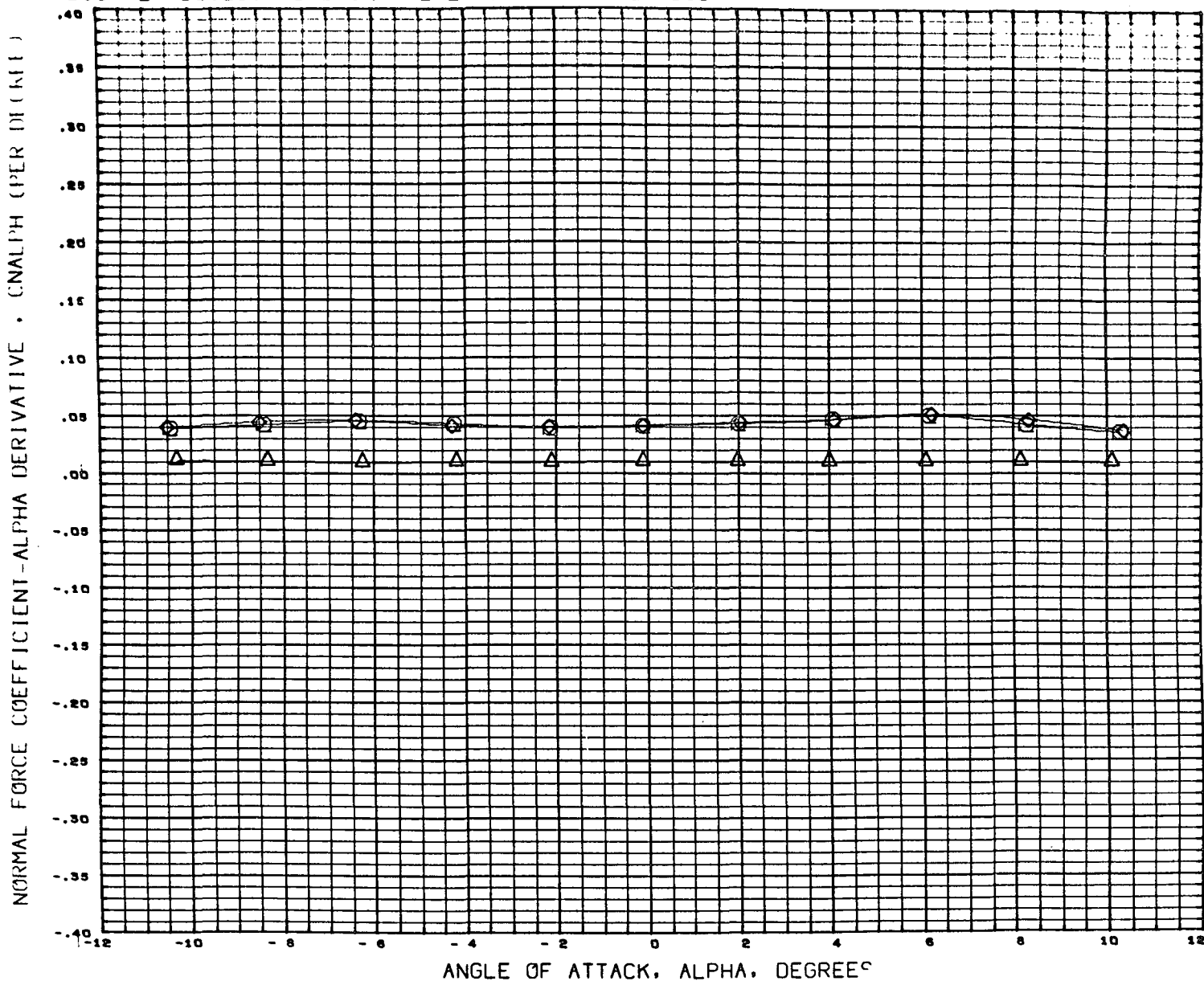


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (13247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF 6.0950 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.956

BOOSTER BUILDUP B/B IN PRE^{SEN}CE OF ORBITER BODY



DATA SET SYMBOL CONFIGURATION DESCRIPTION
(13245A) MSFC490 NR/GD LAUNCH B20W14+B5
(13249A) MSFC490 NR/GD LAUNCH B20C4B+B5
(13247A) MSFC490 NR/GD LAUNCH B20C4BW14+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.600

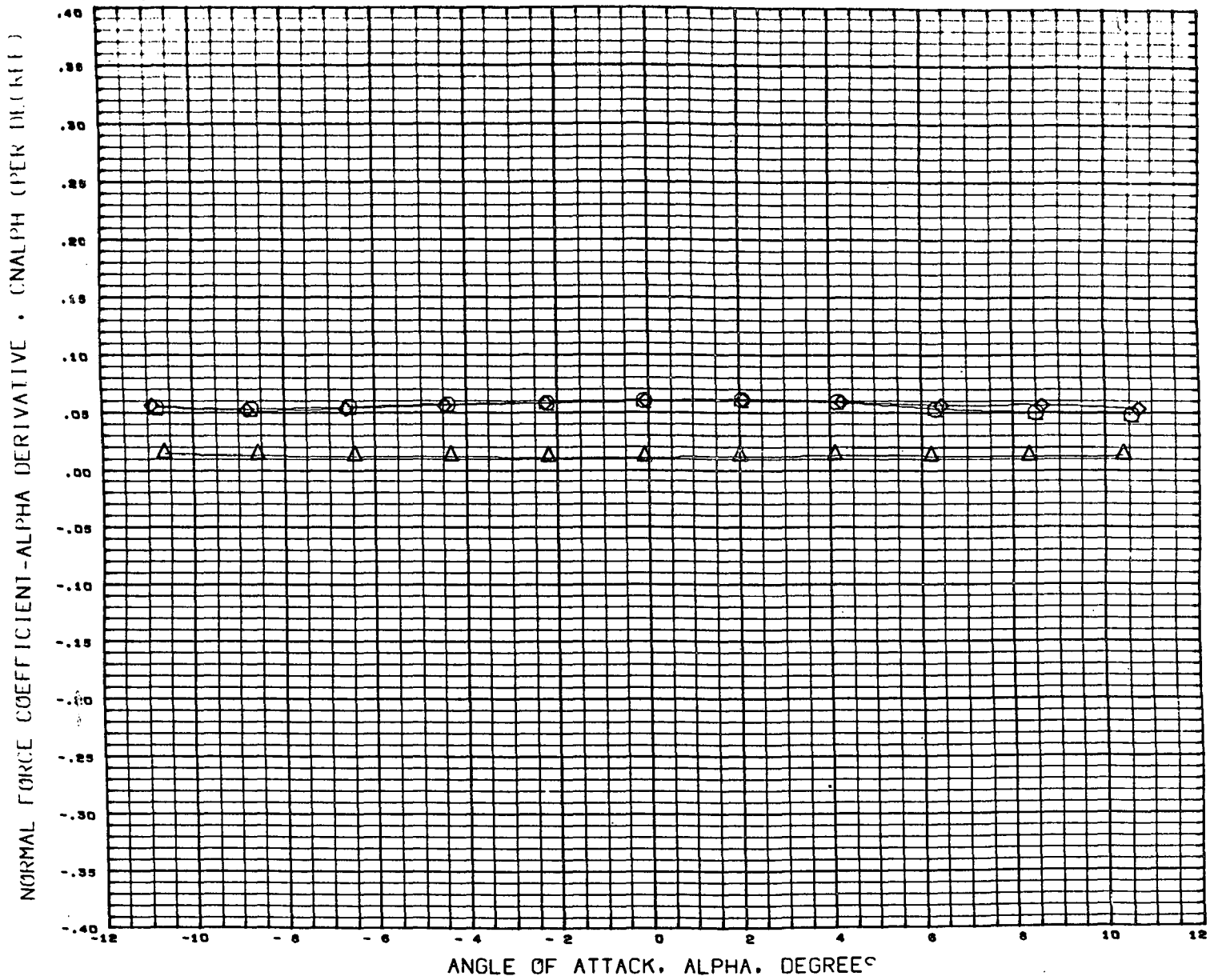
BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (13245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (13247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.900

BOOSTER BUILDUP B/B IN PRE^{SEN}CE OF ORBITER BODY

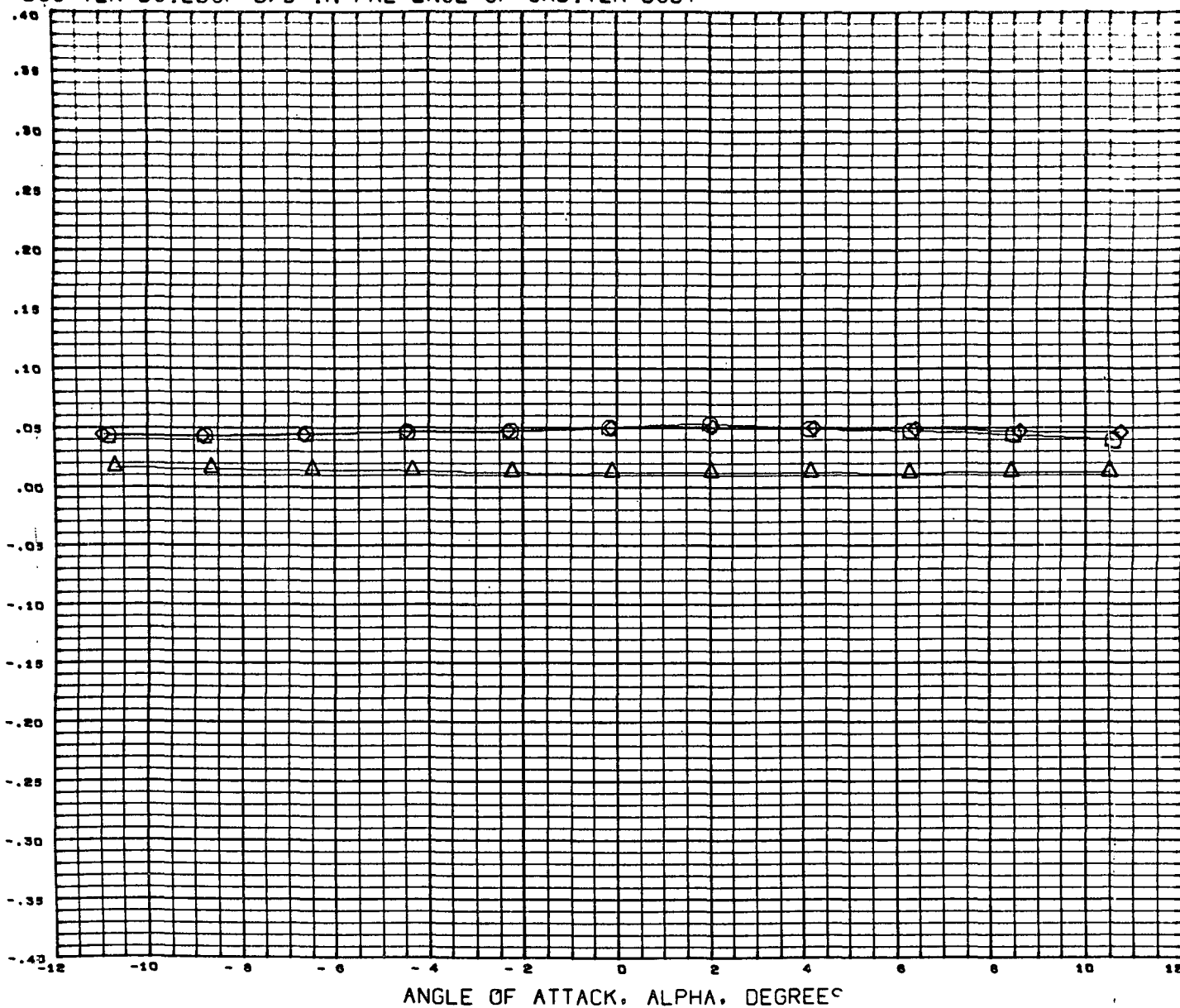


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (13245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 13.6560 SQ IN |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| (13247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.096

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)

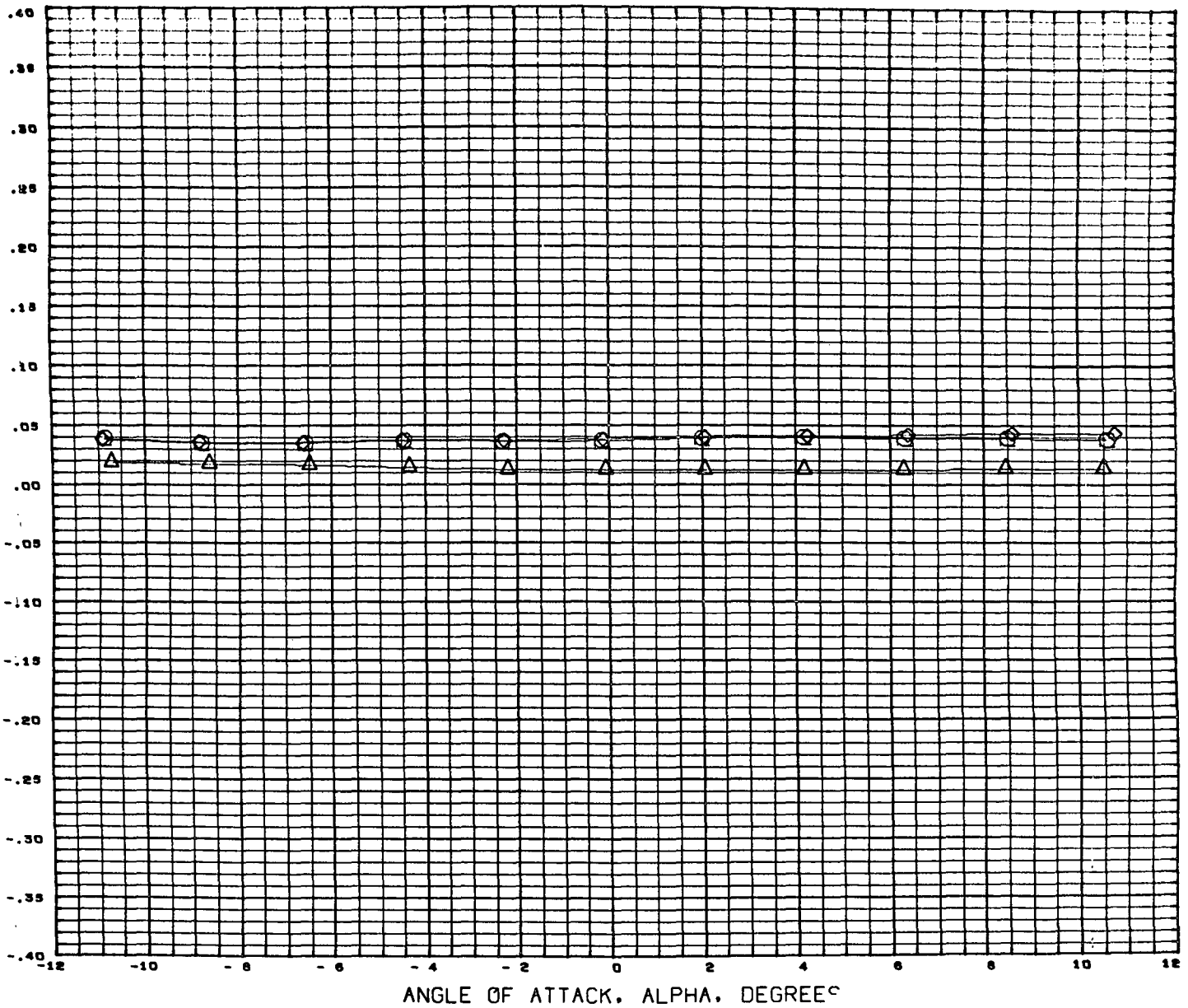


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|------------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (13245A) | MSFC490 NR/GD LAUNCH B20W14+B5 | 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| (13247A) | MSFC490 NR/GD LAUNCH B20C4B+W14+B5 | 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.457

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CANARD (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (13247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

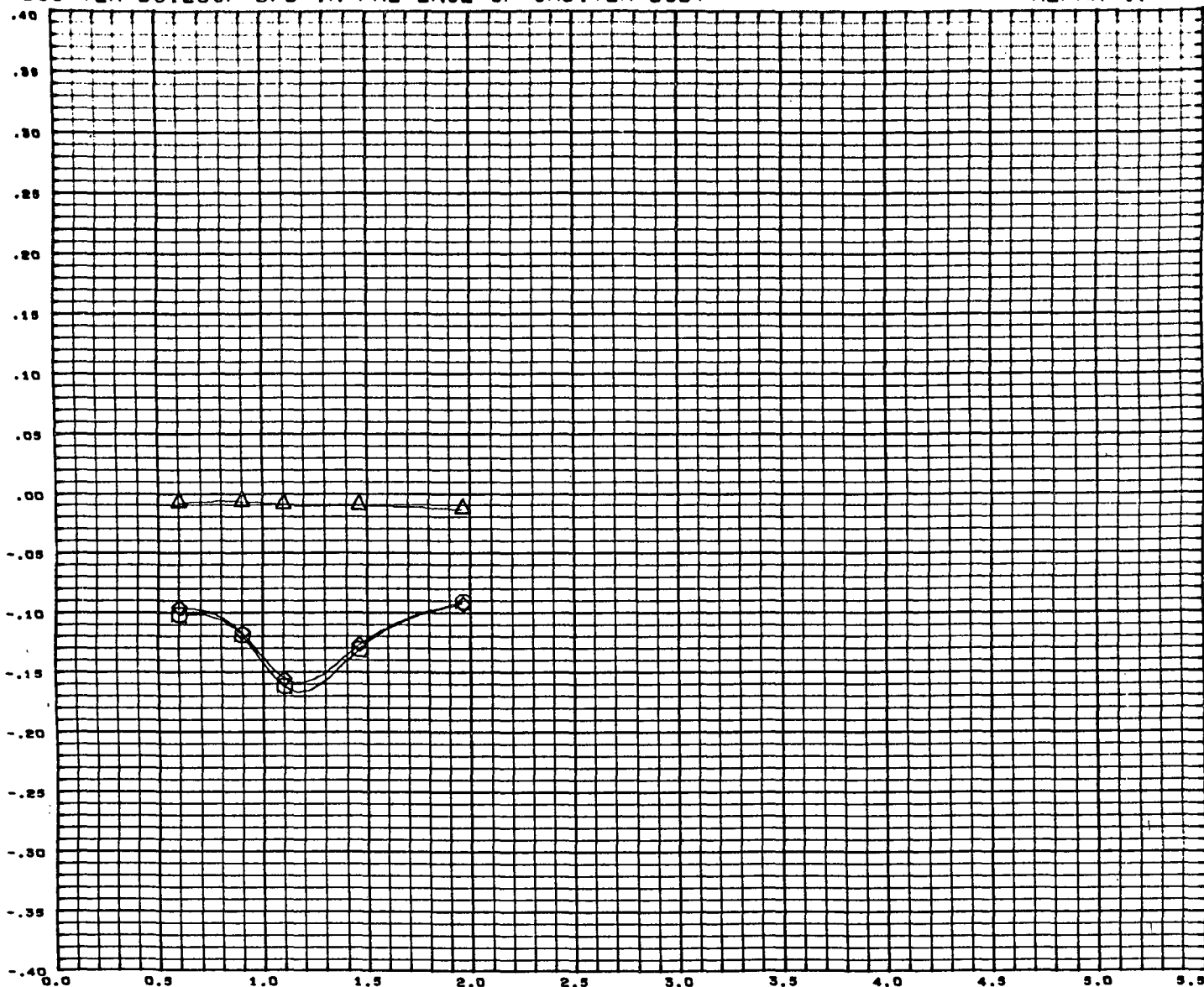
| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0950 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.956

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMALP (PER DEGREE)

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (J3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (J3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (J3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

MACH NUMBER

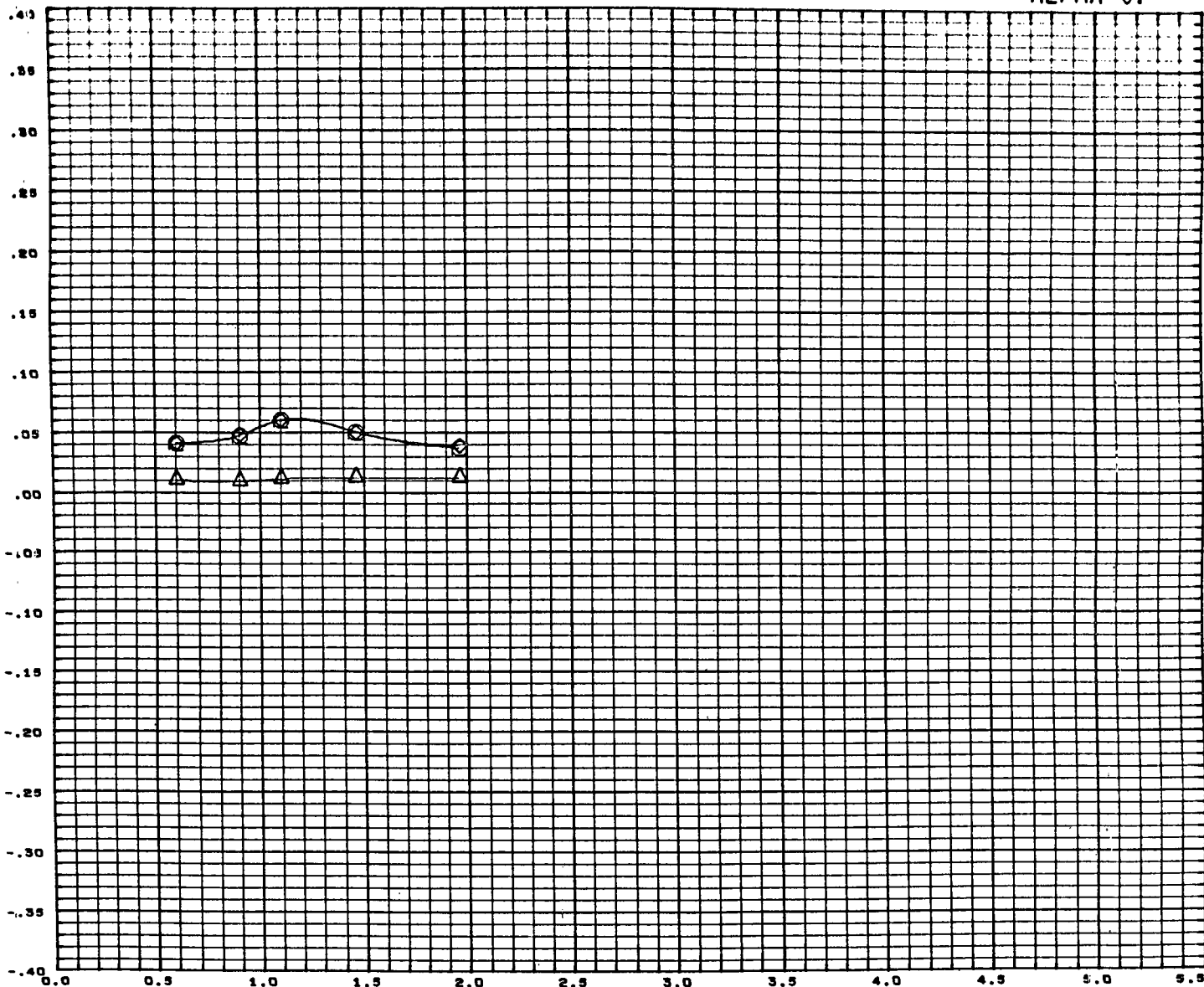
| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

ALPHA=0.

NORMAL FORCE COEFFICIENT - ALPHA DERIVATIVE - CANARD (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (J3249A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (J3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (J3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

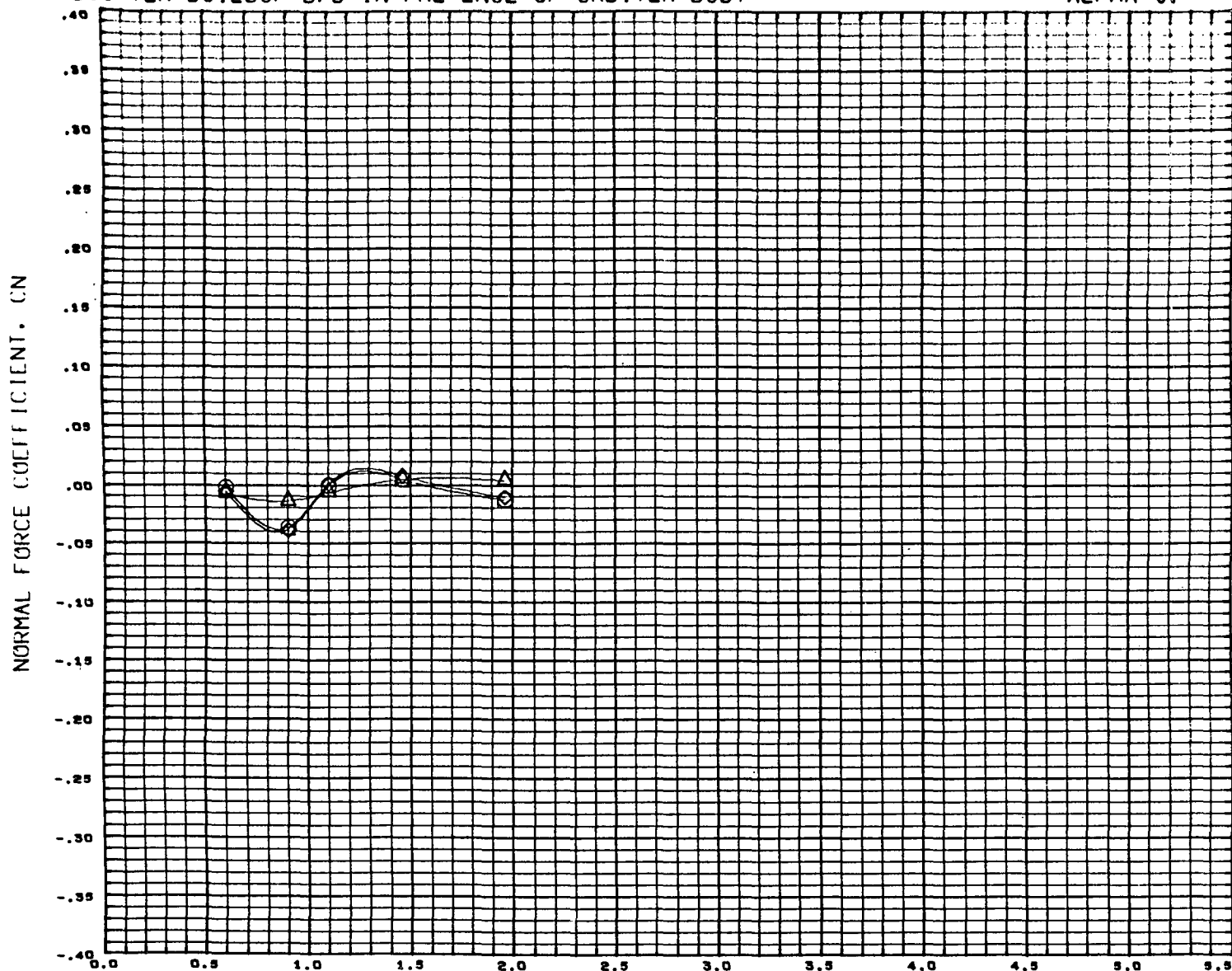
MACH NUMBER

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (K3249A) ○ | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (K3249A) △ | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (K3247A) ◇ | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

MACH NUMBER

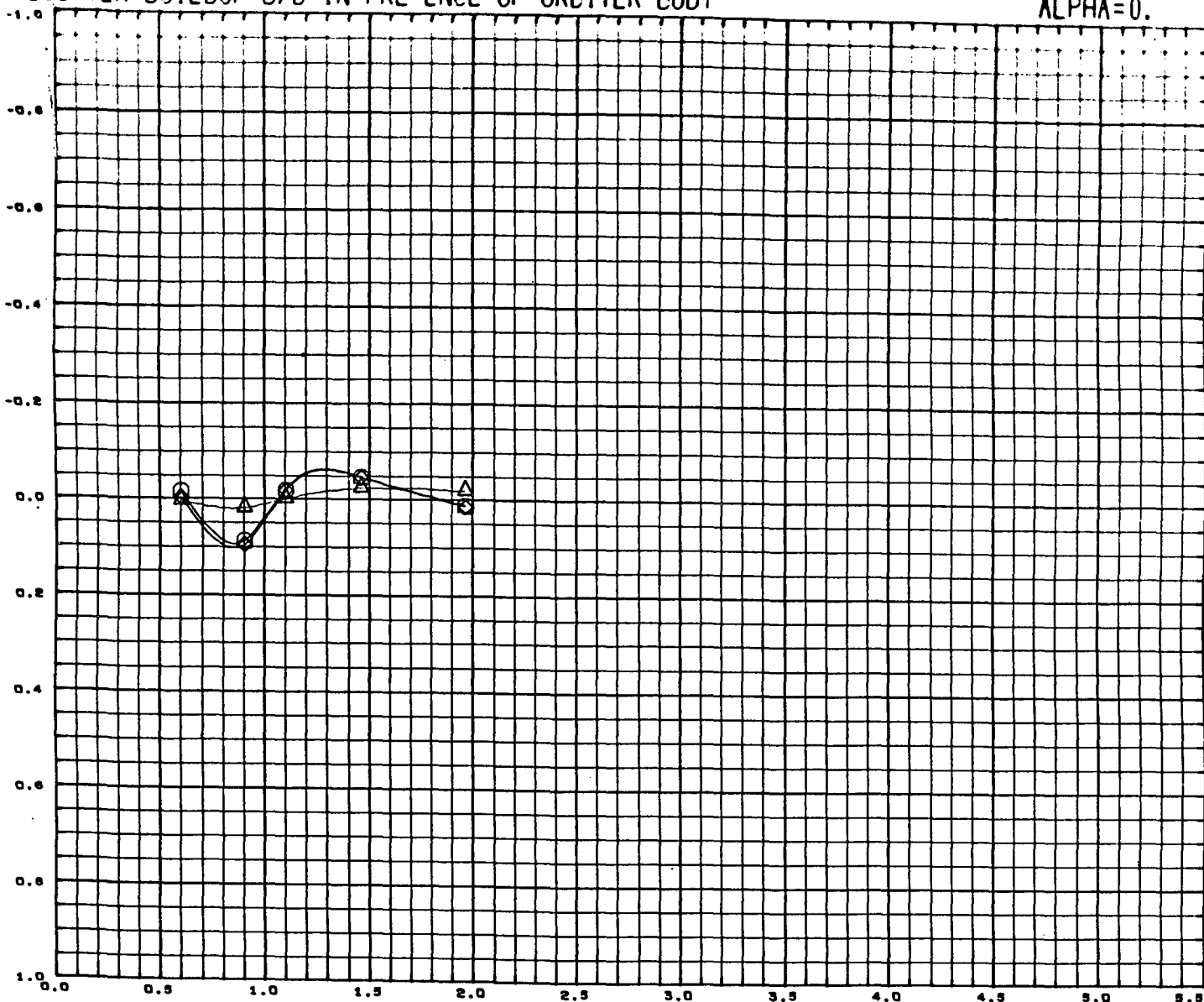
| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

BOOSTER BUILDUP E/B IN PRESENCE OF ORBITER BODY

ALPHA=0.

PITCHING MOMENT COEFFICIENT, C_{LM}



MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (K3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (K3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (K3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

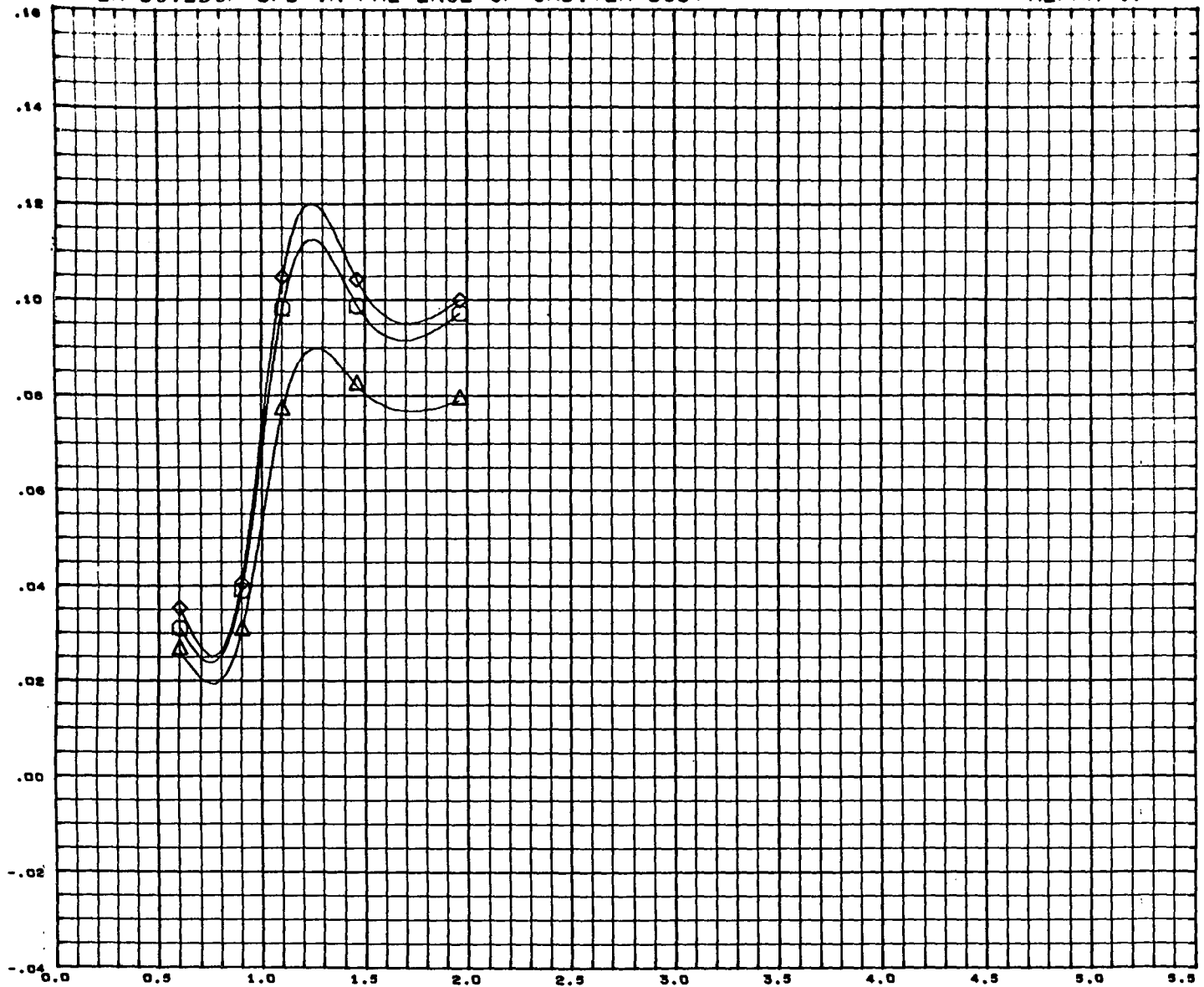
| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

BOOSTER BUILDUP B/B IN PRESENCE OF ORBITER BODY

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



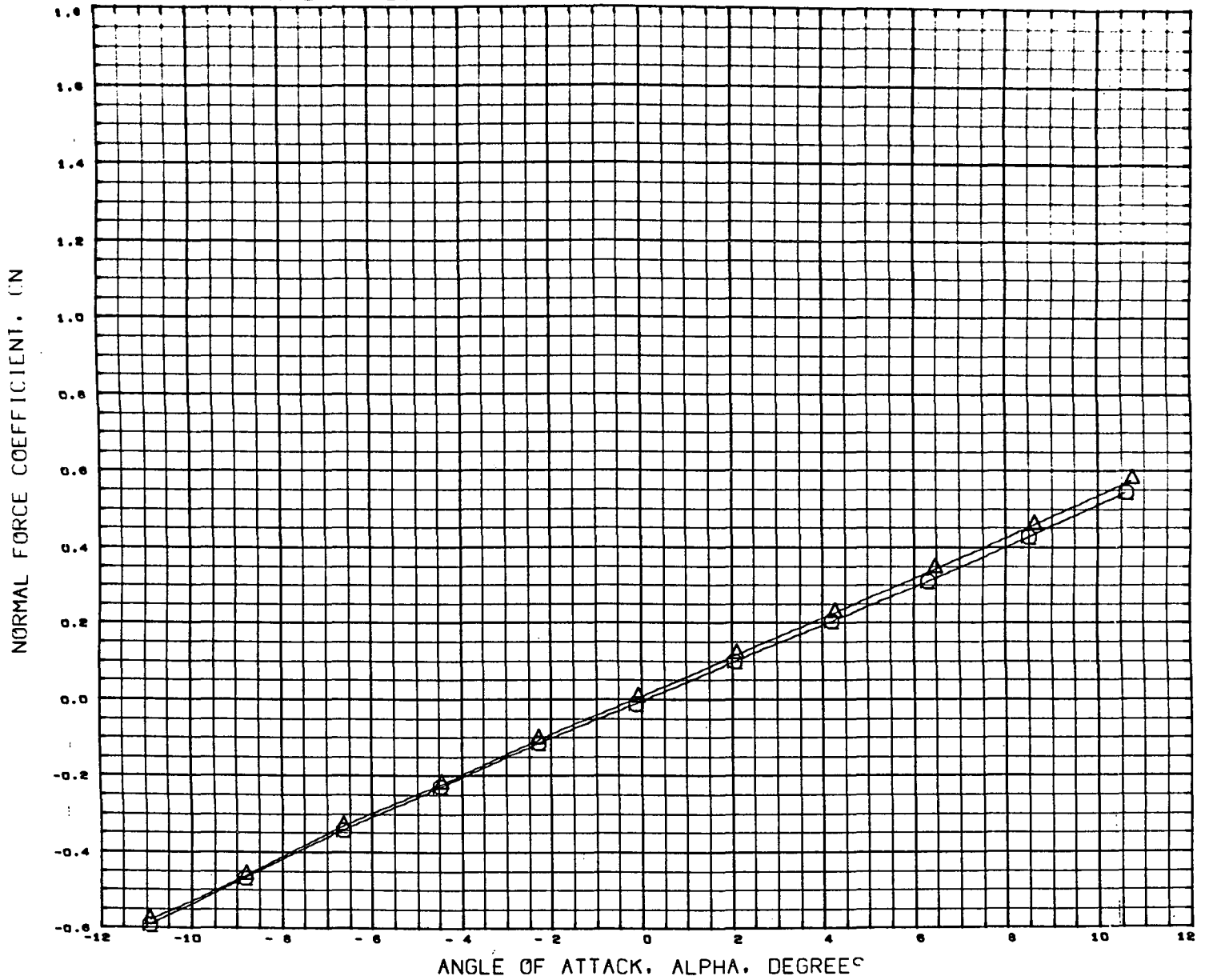
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (K3245A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (K3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (K3247A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5 |

MACH NUMBER

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| 0.000 | 0.000 | 0.000 | 4.000 | BREF 0.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

BOO^oTER AND ORBITER BUILDUP,B/B



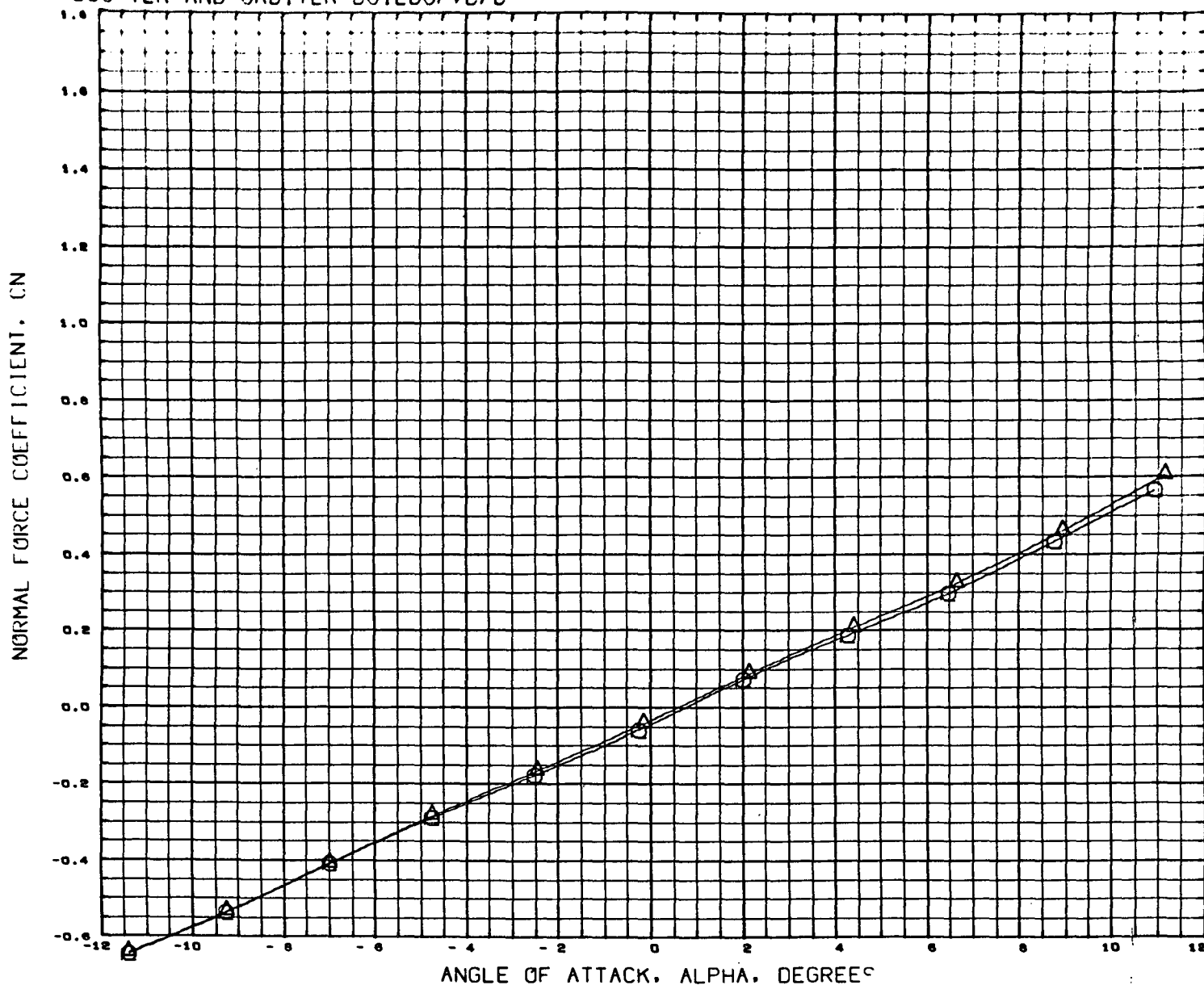
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN |
|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.600

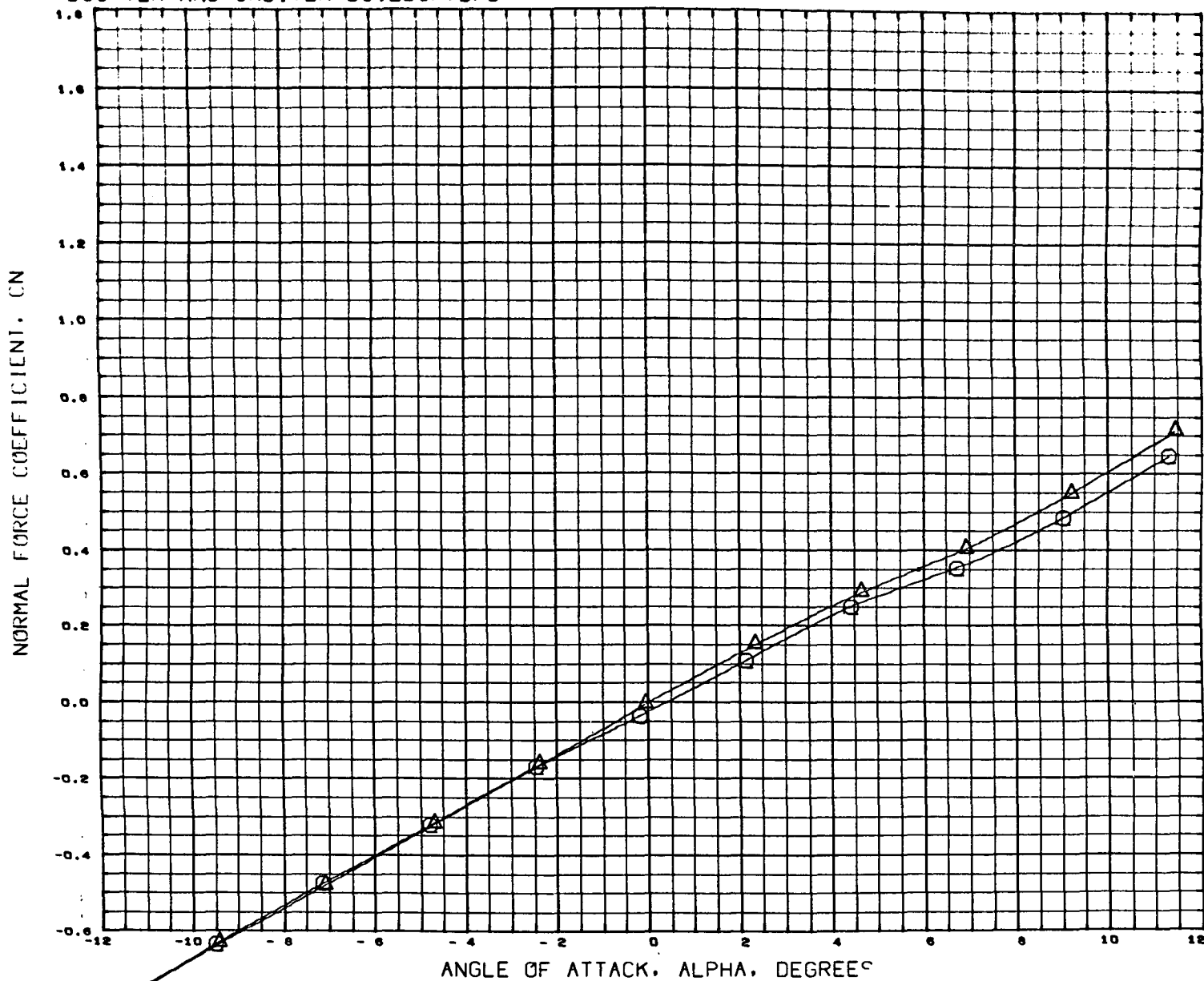
BOOSTER AND CREITER BUILDUP, B/B



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION | |
|-----------------|---|--------|-------|--------|--------|-----------------------|---------------|
| (H3248A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 | 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRF | 0.0000 |
| | | | | | | YMRF | 0.0000 |
| | | | | | | ZMRF | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.894

BOOSTER AND ORBITER BUILDUP, B/B



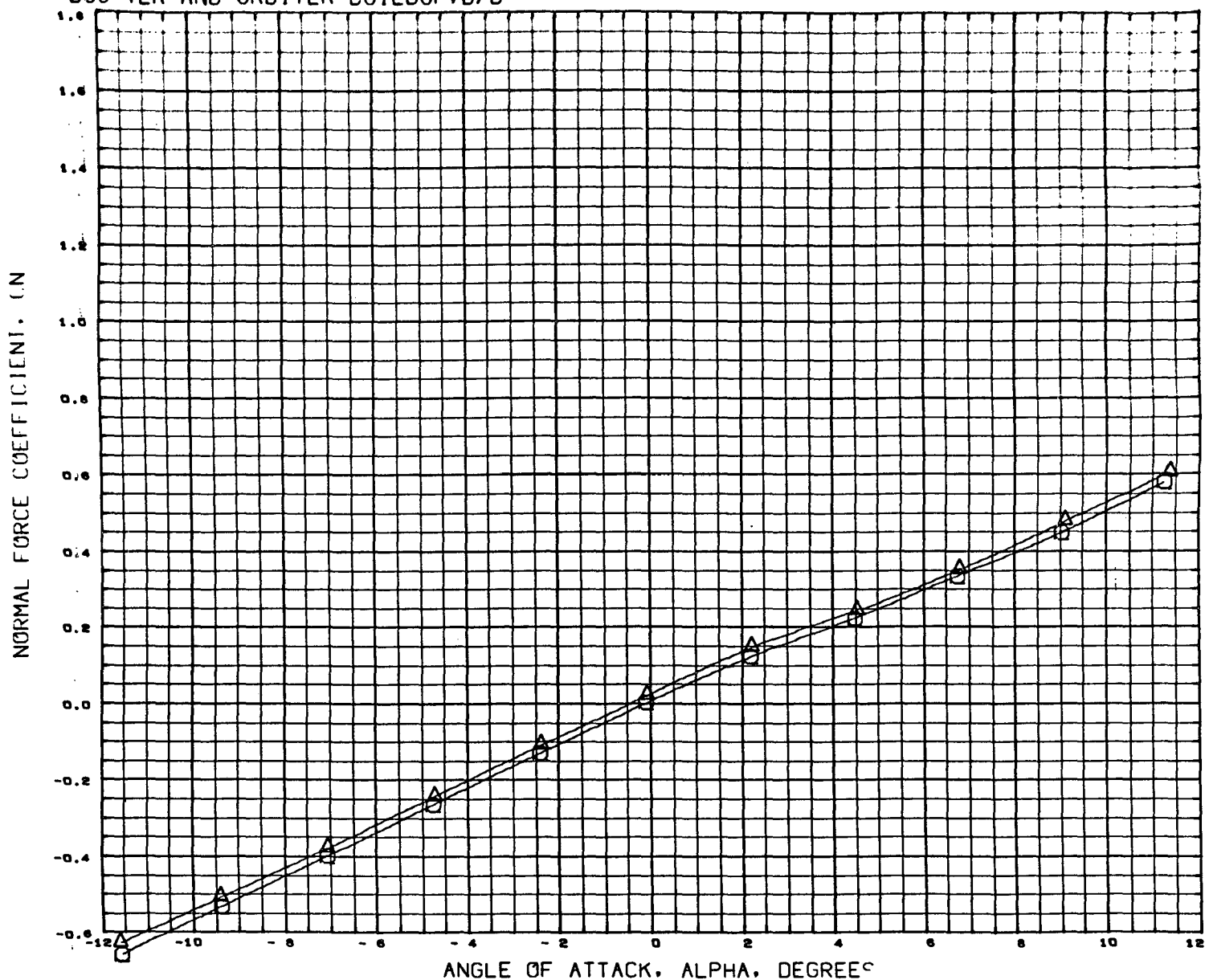
| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|----------|--------|---|
| (H3246A) | ○ | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3248A) | △ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN |
|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0033 | SCALE |

MACH 1.100

BOOSTER AND ORBITER BUILDUP, B/B

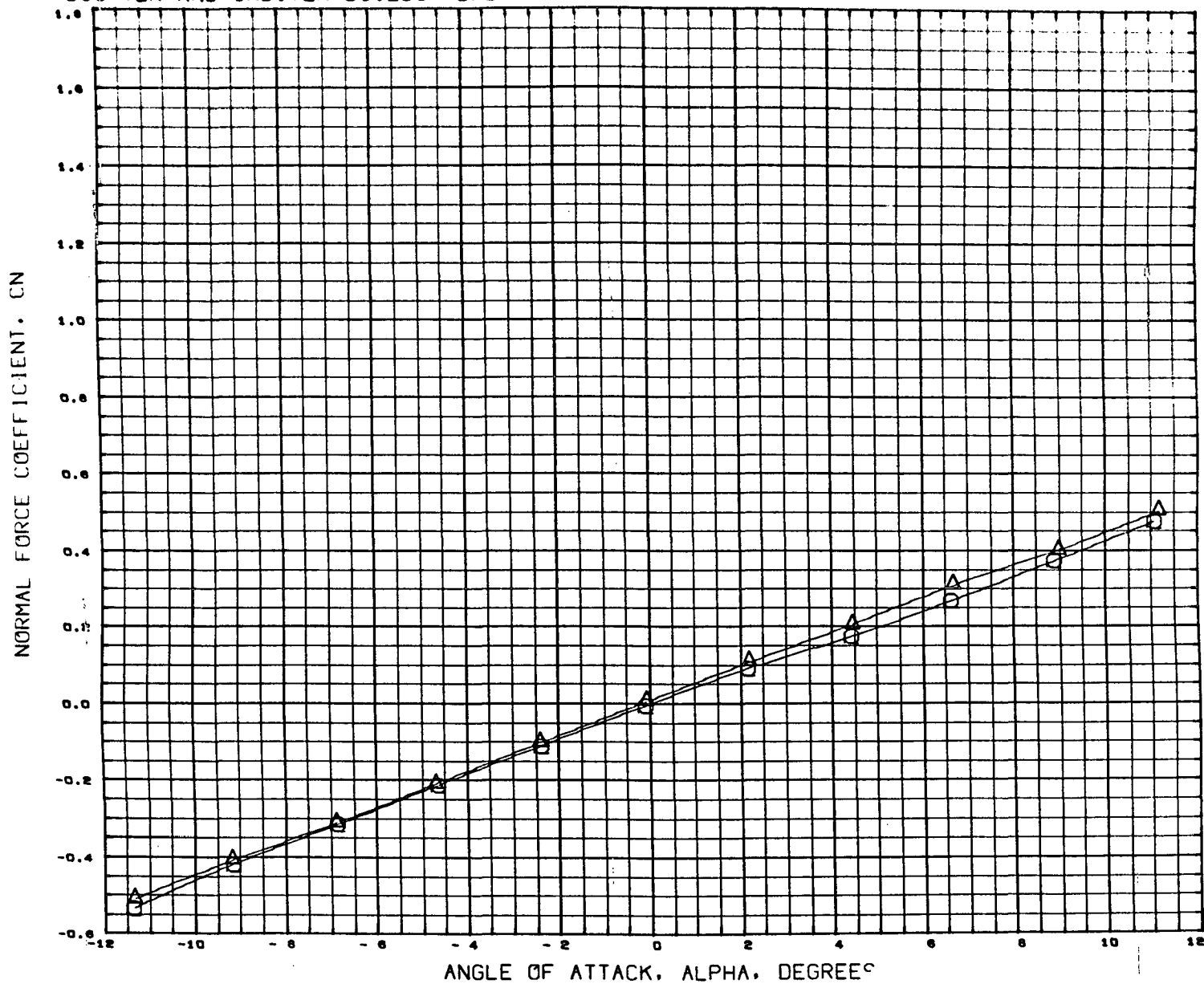


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|----------------------|---|
| (H3246A) \square | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3248A) \triangle | MSFC490 NR/GD LAUNCH B20C48W14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION |
|--------|-------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
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MACH 1.458

BOOSTER AND ORBITER BUILDUP, B/B



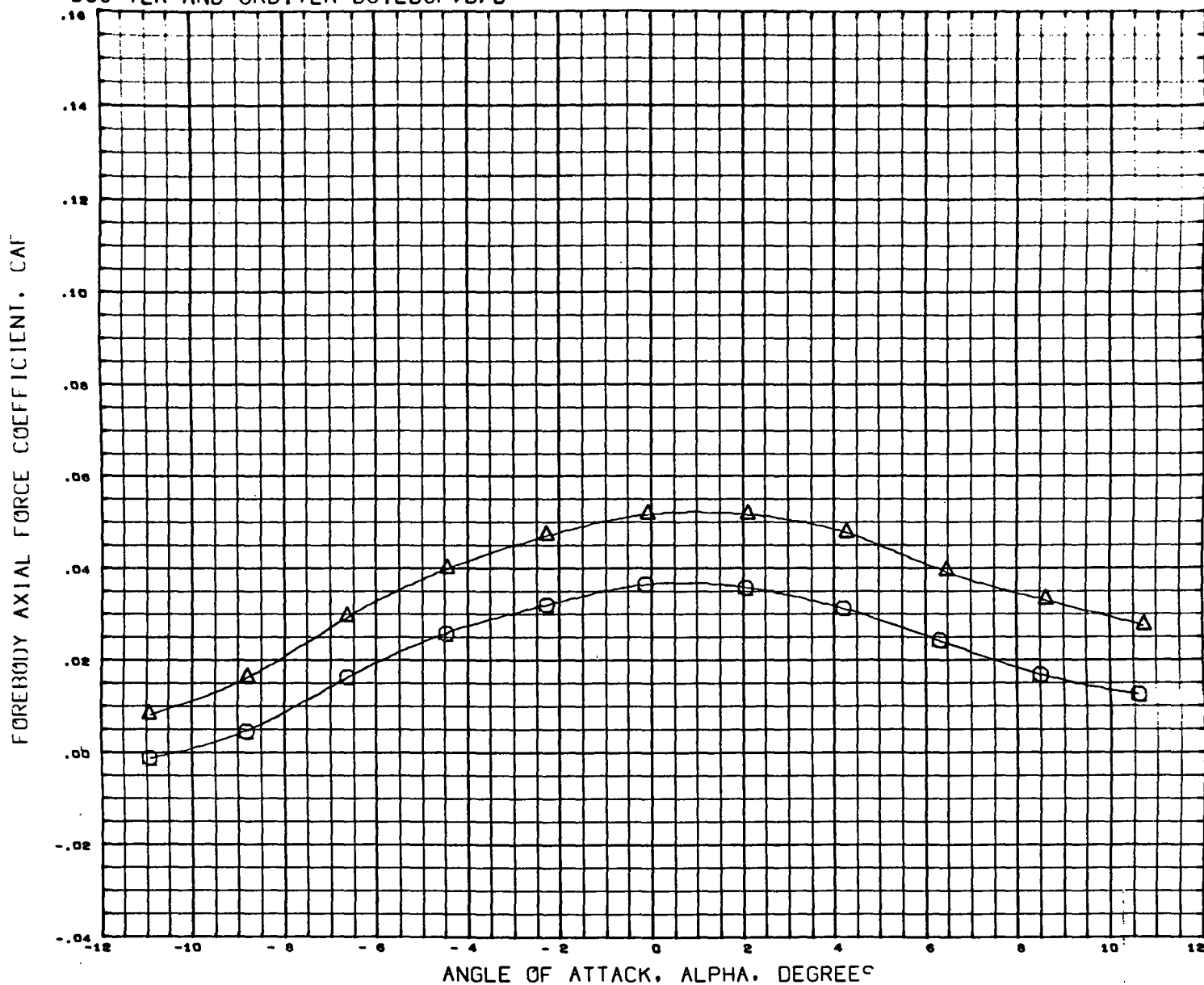
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(H3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17
(H3246A) MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

CANARD BETA ELVATR POSITN
0.000 0.000 0.000 4.000

REFERENCE INFORMATION
SREF 15.6560 SQ IN
LREF 3.0990 INCHES
BREF 6.0990 INCHES
XMRP 0.0000
YMRP 0.0000
ZMRP 0.0000
SCALE 0.0033 SCALE

MACH 1.963

BOOster AND ORBITER BUILDUP, B/B



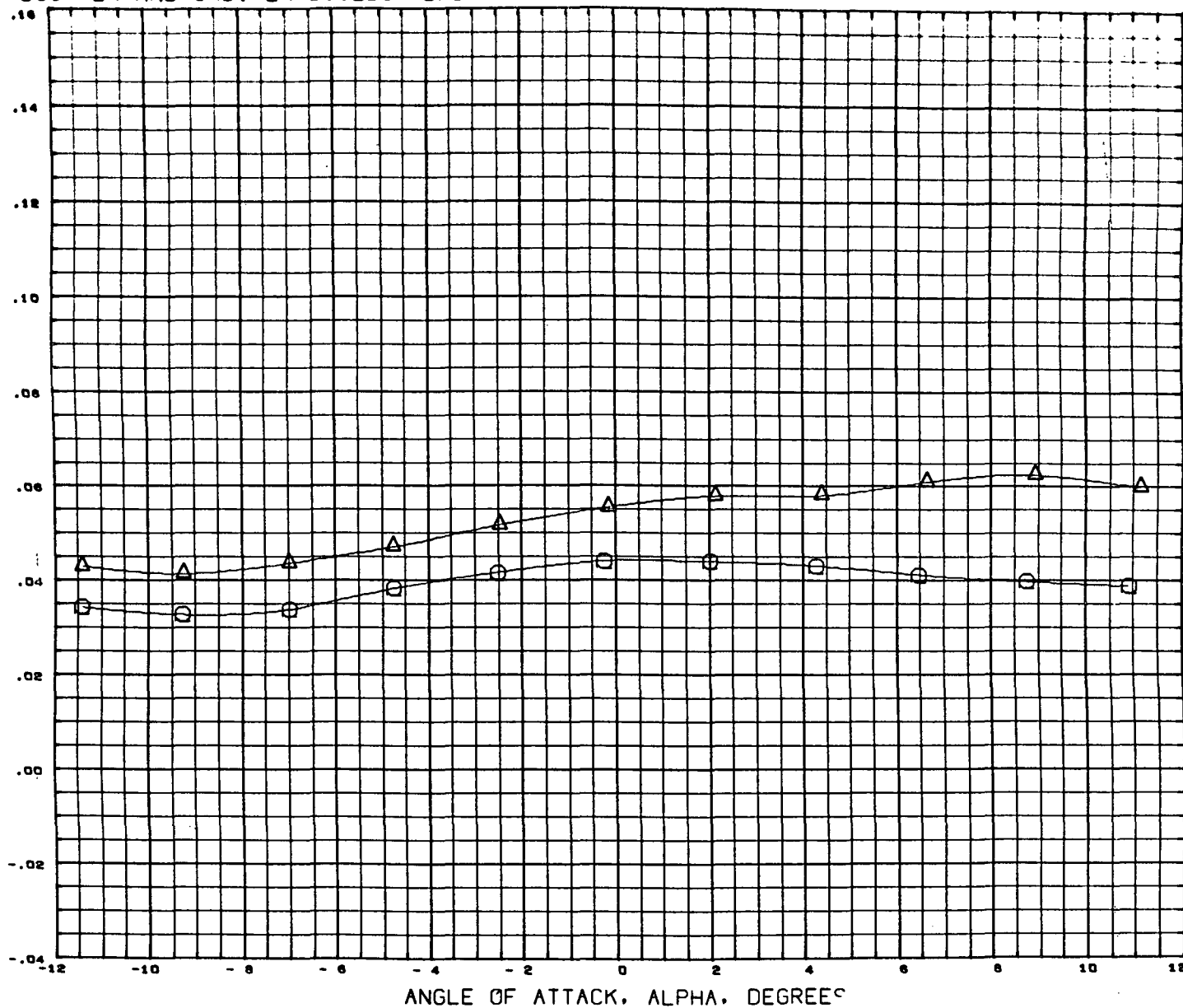
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| (H3246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION |
|--------|-------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| | | | | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.600

BOOSTER AND ORBITER BUILDUP, B/B

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



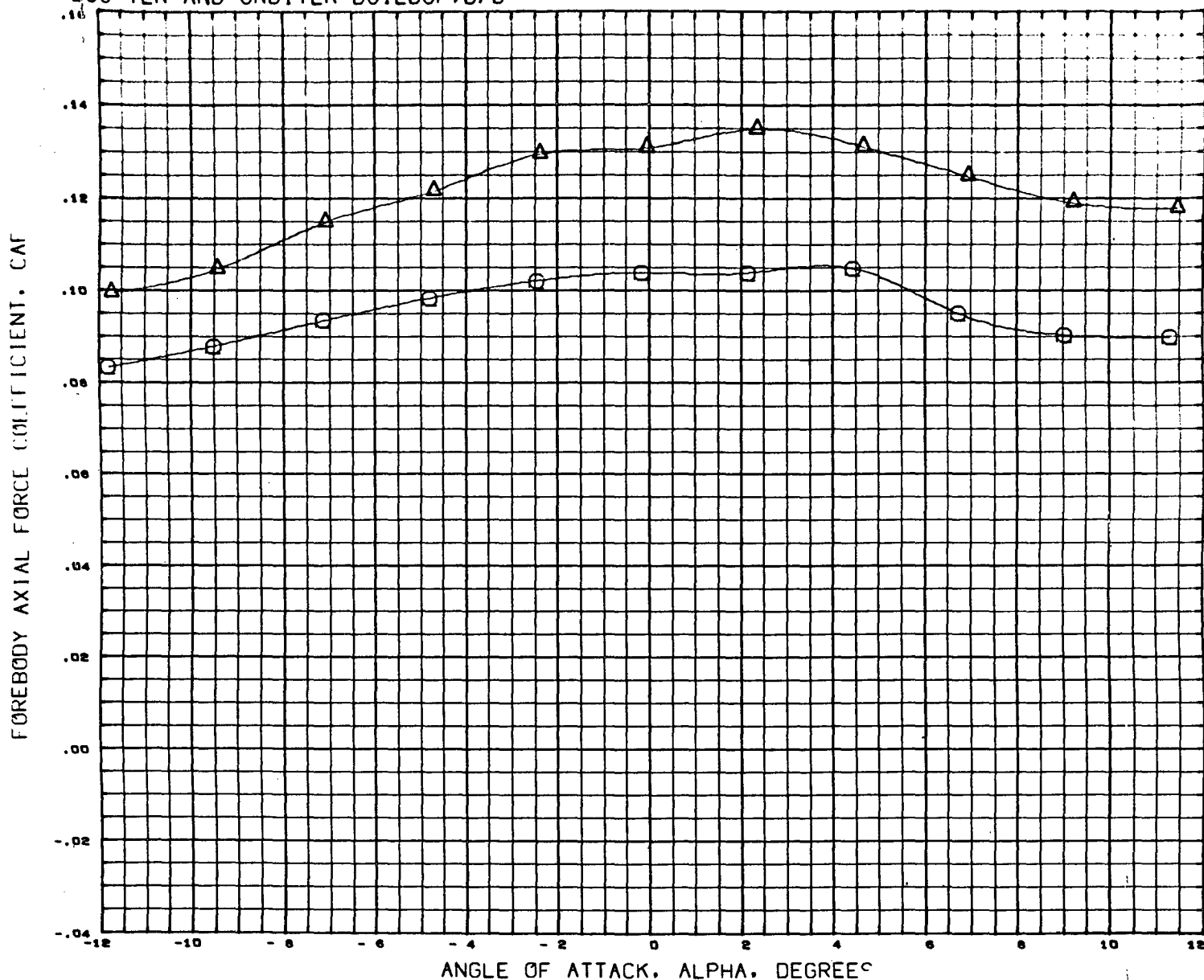
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(H3246A) MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

CANARD BETA ELVATR POSITN
0.000 0.000 0.000 4.000

REFERENCE INFORMATION
SREF 15.6560 SQ IN
LREF 3.0950 INCHES
BREF 6.0990 INCHES
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YMRP 0.0000
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SCALE 0.0035 SCALE

MACH 0.894

BOOSTER AND ORBITER BUILDUP, B/B



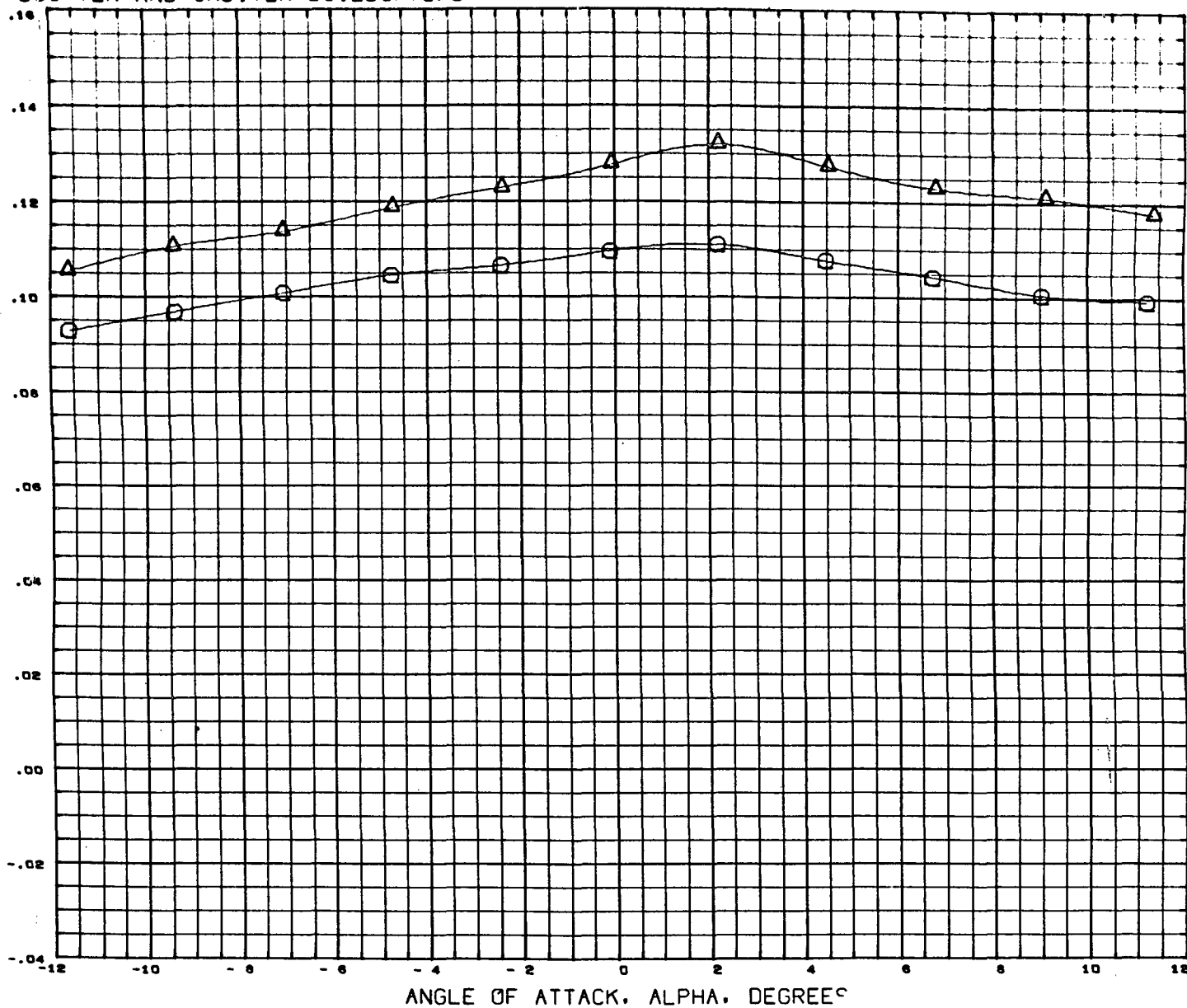
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| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION | |
|--------|-------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRF | 0.0000 |
| | | | | YMRF | 0.0000 |
| | | | | ZMRF | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.100

BOOSTER AND ORBITER BUILDUP, B/B

FOREBODY AXIAL FORCE COEFFICIENT, CAF



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
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| (H3248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

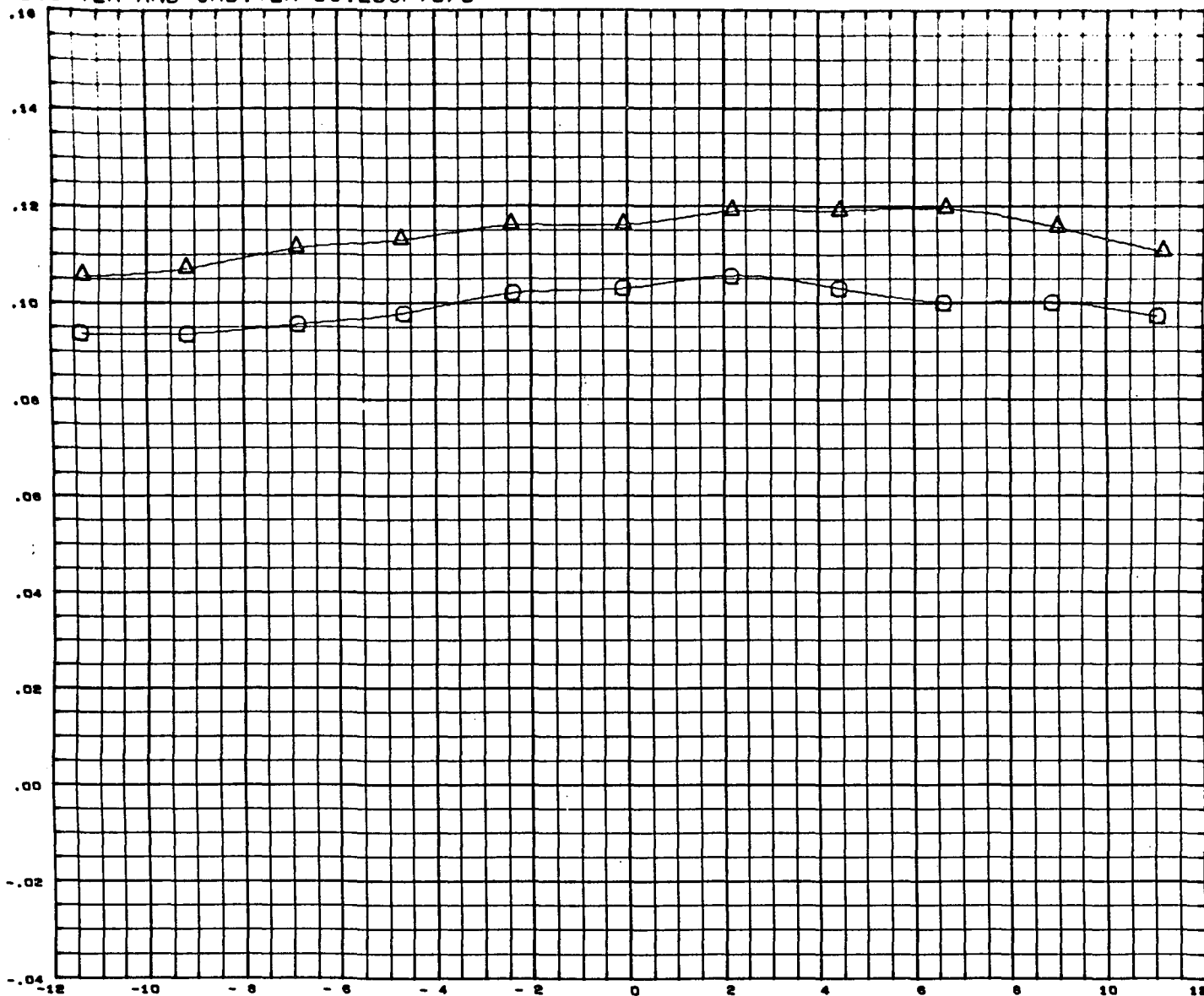
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|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
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| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |



MACH 1.458

BOOster AND ORBITER BUILDUP, B/B

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



ANGLE OF ATTACK, ALPHA, DEGREE°

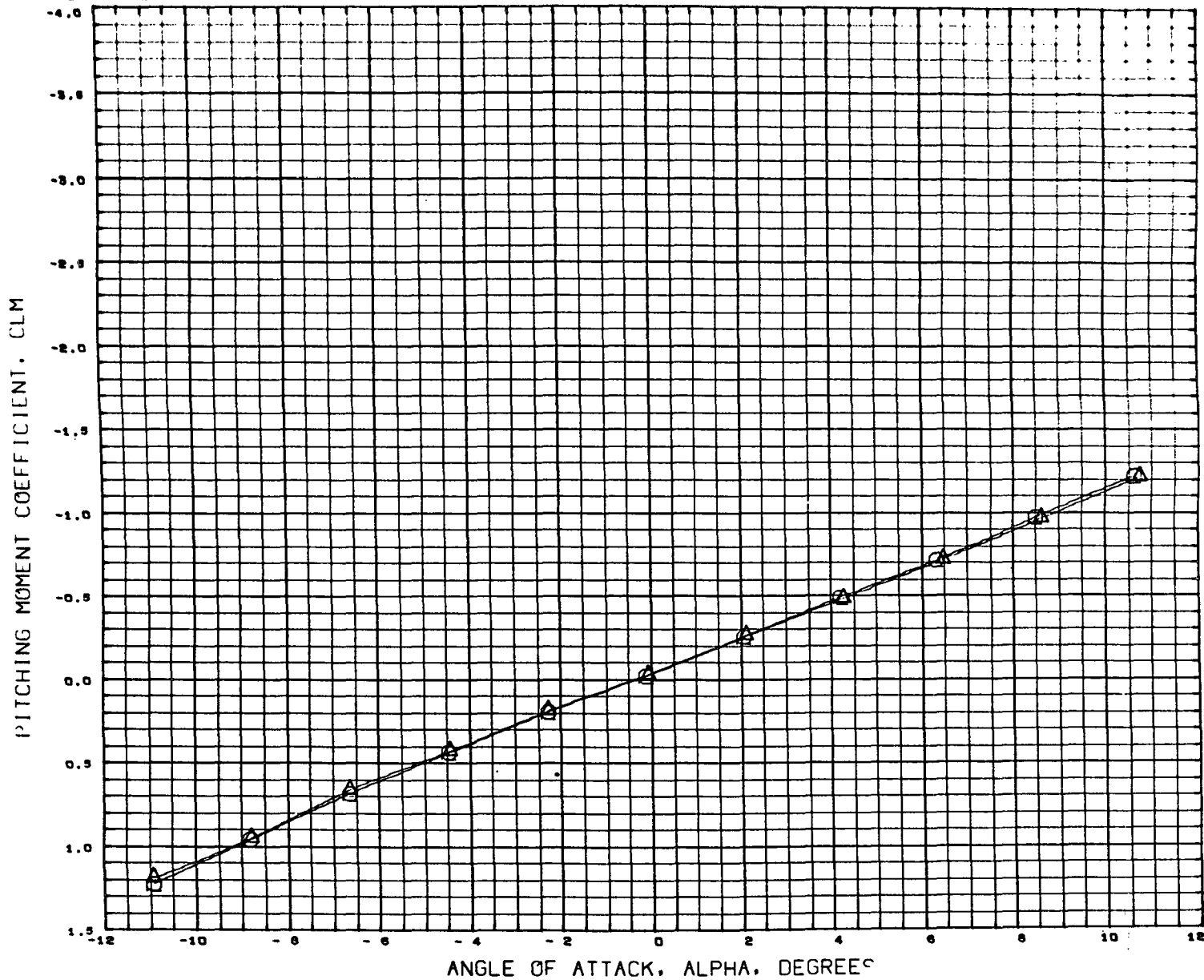
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| (H3246A)  | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN |
|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.963

BOOSTER AND ORBITER BUILDUP,B/B



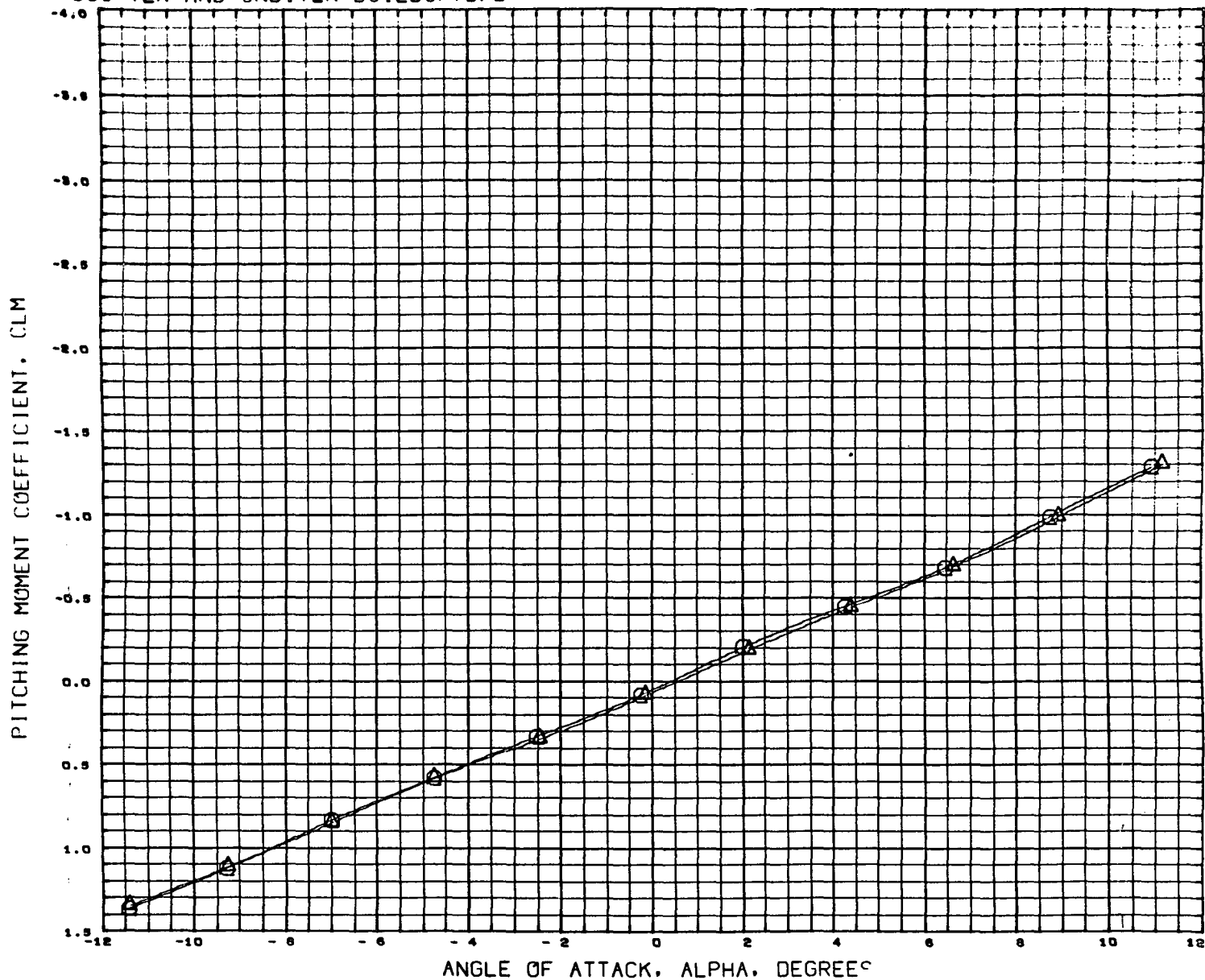
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(H3248A) MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

CANARD BETA ELVATR POSITN
0.000 0.000 0.000 4.000
0.000 0.000 0.000 4.000

REFERENCE INFORMATION
SREF 15.6560 SQ IN
LREF 3.0950 INCHES
BREF 6.0990 INCHES
XMRP 0.0000
YMRP 0.0000
ZMRP 0.0000
SCALE 0.0035 SCALE

MACH 0.600

BOOSTER AND ORBITER BUILDUP.B/B



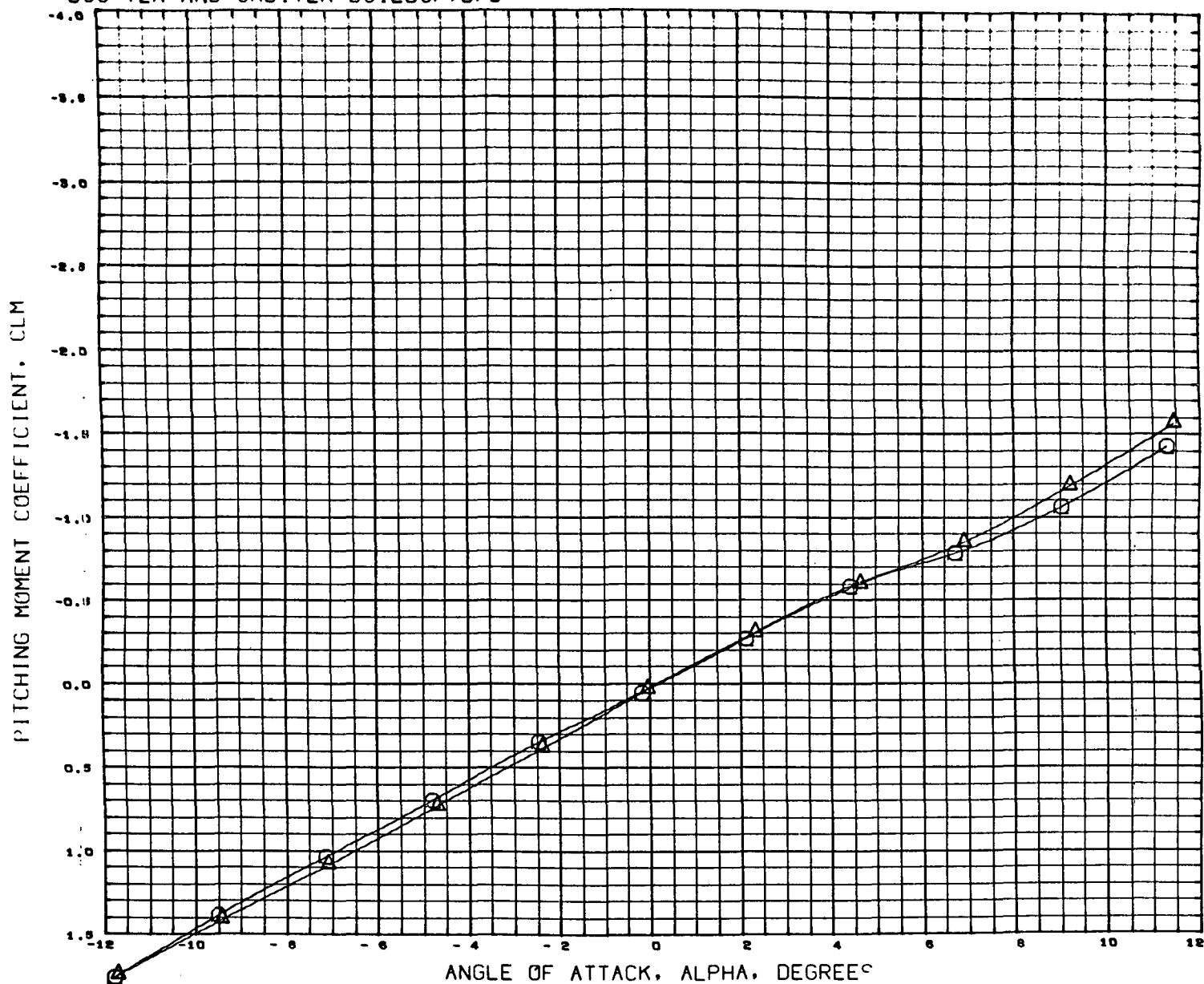
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| (H3248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN |
|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.694

BOOSTER AND ORBITER BUILDUP, B/B



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H3246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

(H3248A) MSFC490 NR/GD LAUNCH B20C4BW14+B3W17V17

CANARD BETA ELVATR POSITN

0.000 0.000 0.000 4.000

0.000 0.000 0.000 4.000

REFERENCE INFORMATION

SREF 15.6560 SQ IN

LREF 3.0990 INCHES

BREF 6.0990 INCHES

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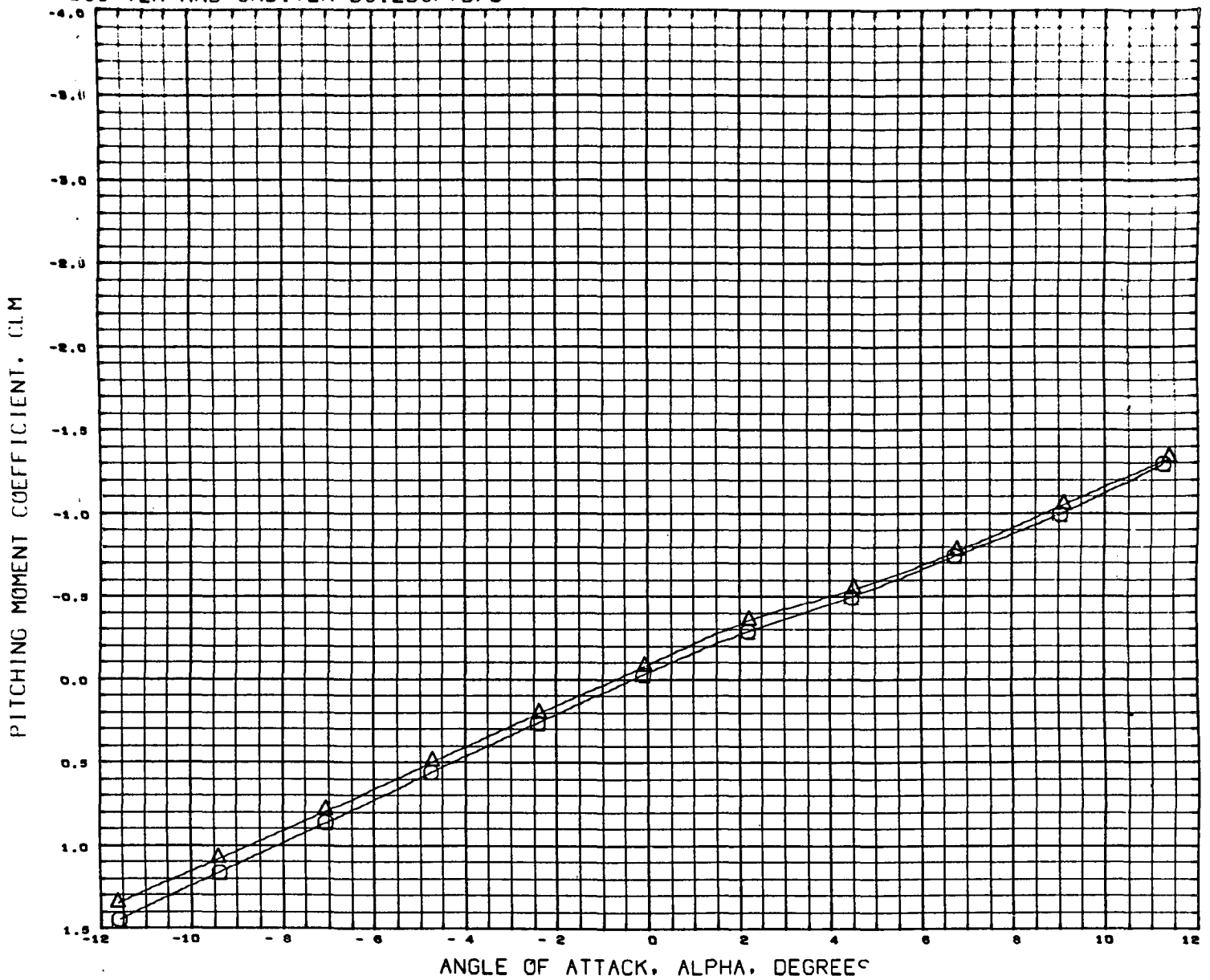
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ZMRF 0.0000

SCALE 0.0035 SCALE

MACH 1.100

BOO^{CT}TER AND ORBITER BUILDUP, B/B



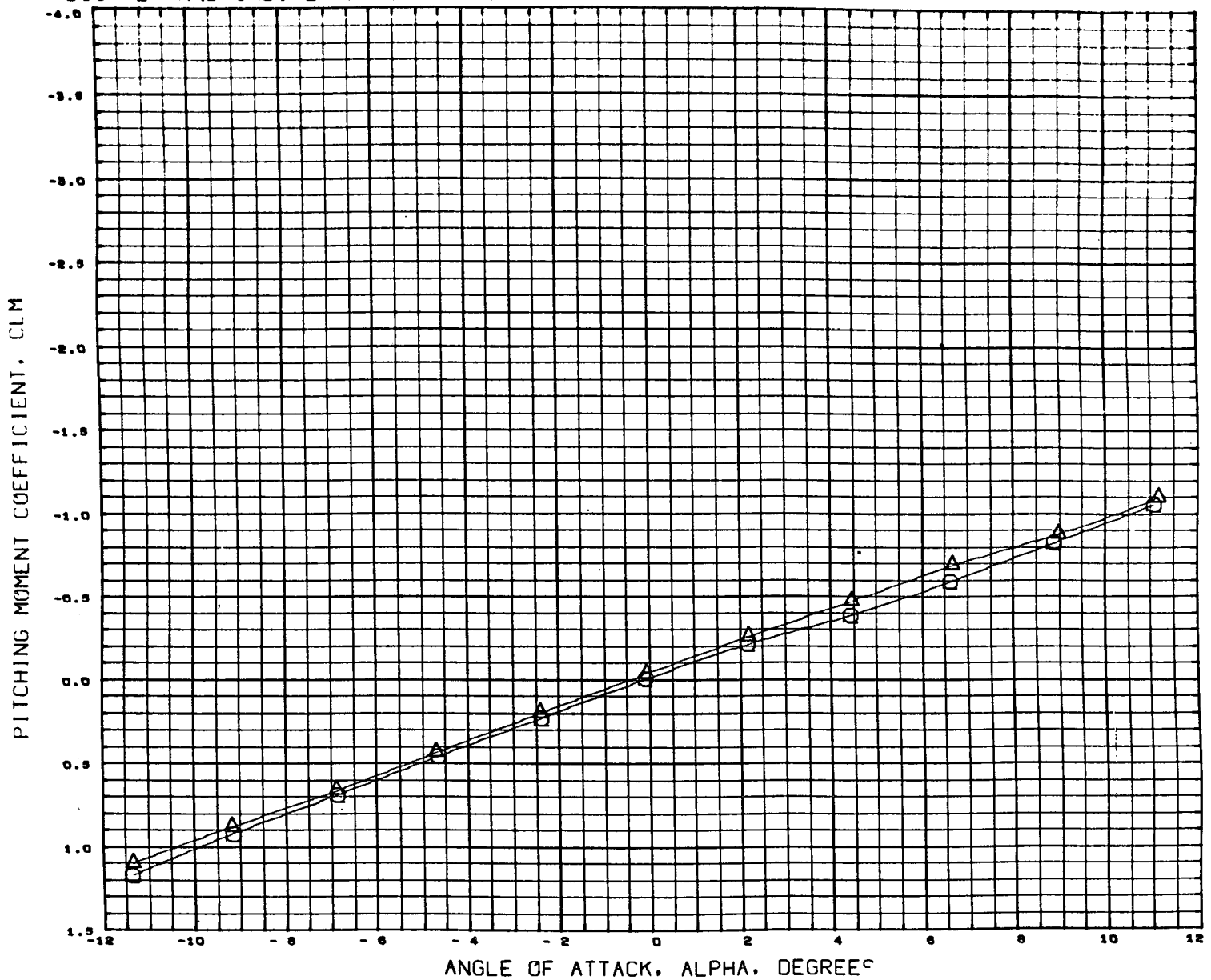
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| CANARD | BETA | ELVATR | POSITN |
|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.456

BOOster AND ORBITER BUILDUP.B/B



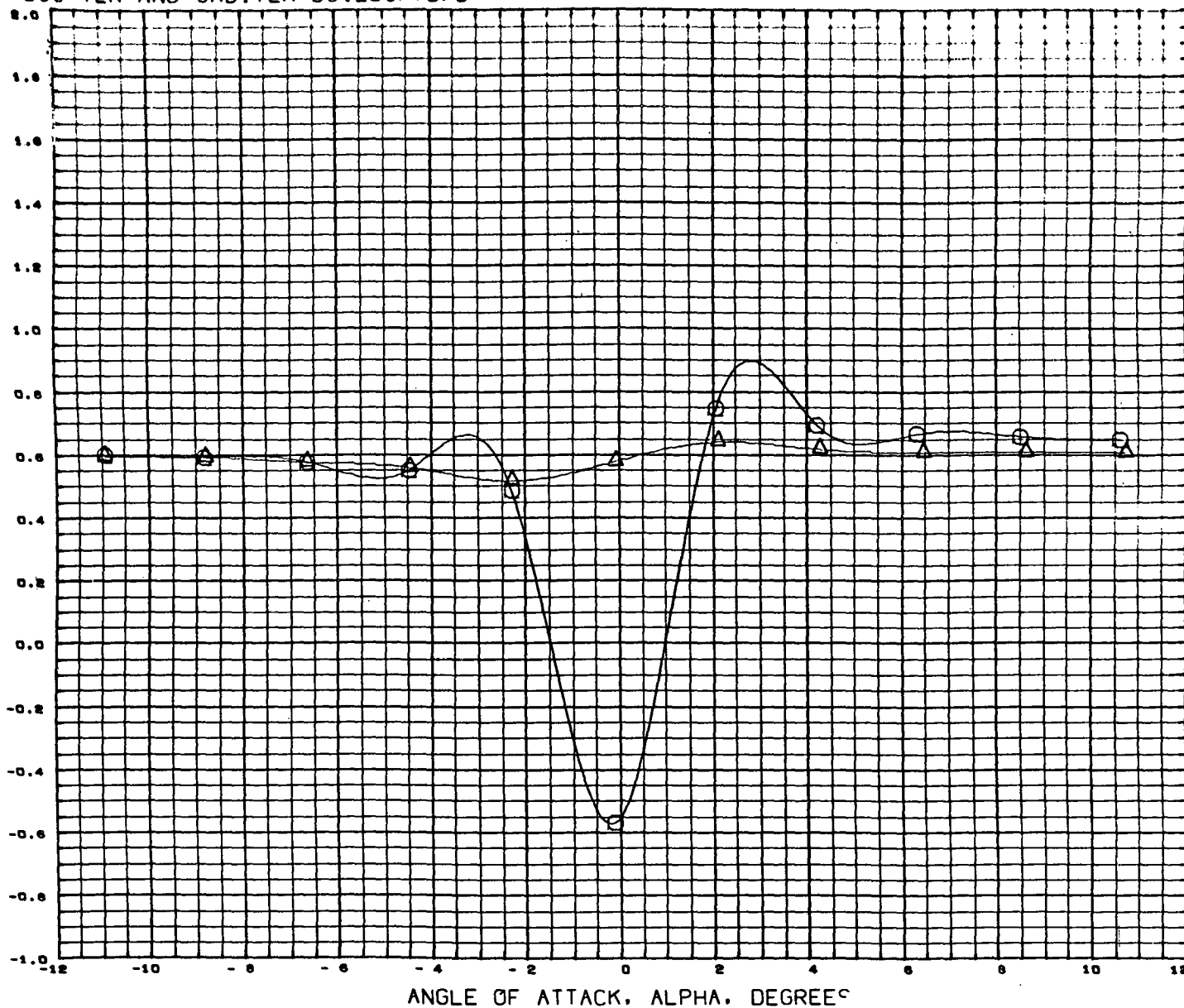
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| (H3248A) △ | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION |
|--------|-------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| | | | | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.963

BOOSTER AND ORBITER BUILDUP, B/B

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L

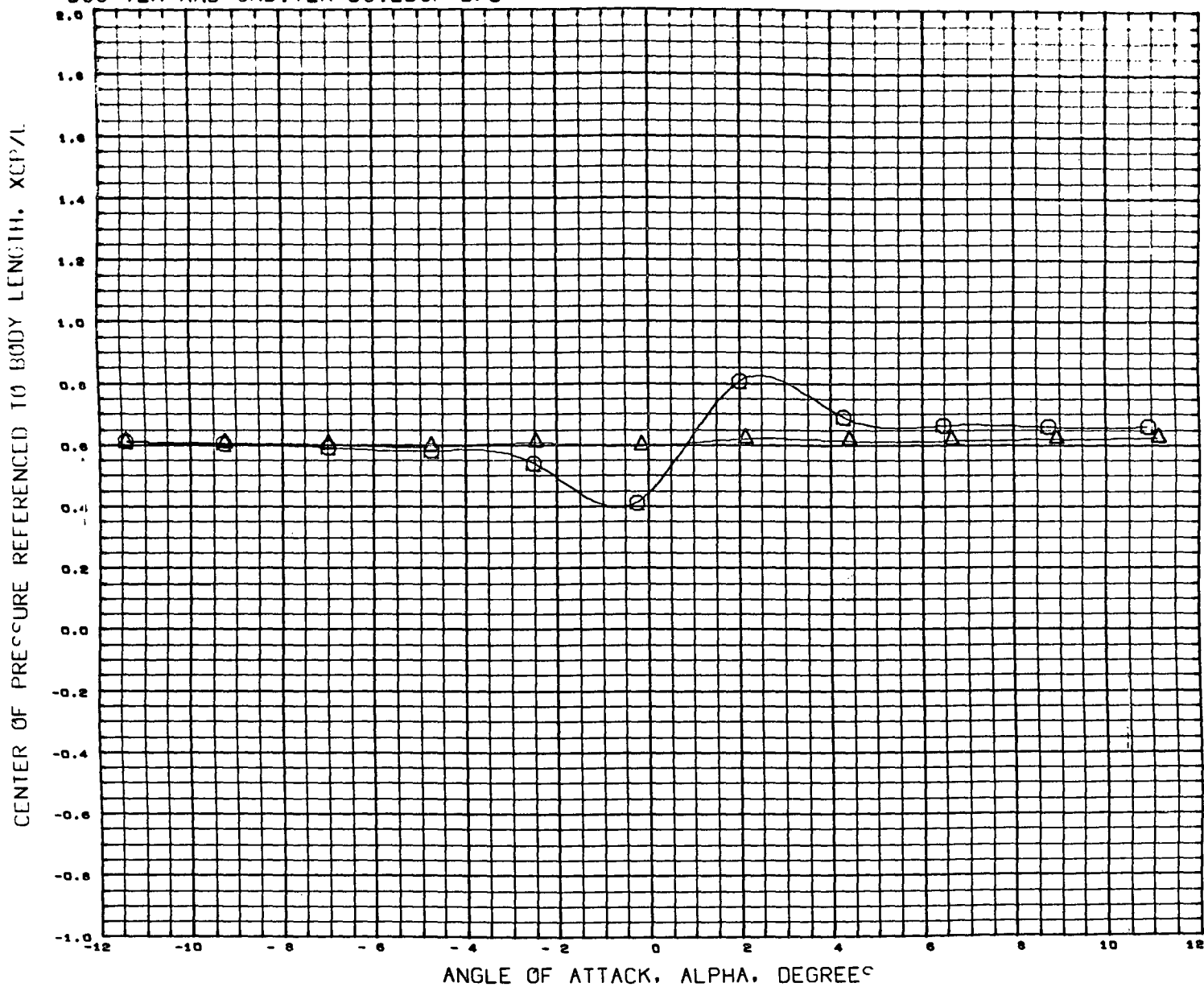


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
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| (H3248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION |
|--------|-------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.600

BOOSTER AND ORBITER BUILDUP.B/B



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3246A) ○ MSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3248A) △ MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION | |
|--------|-------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.894

BOO^{CT}ER AND ORBITER BUILDUP,B/B

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



ANGLE OF ATTACK, ALPHA, DEGREE^C

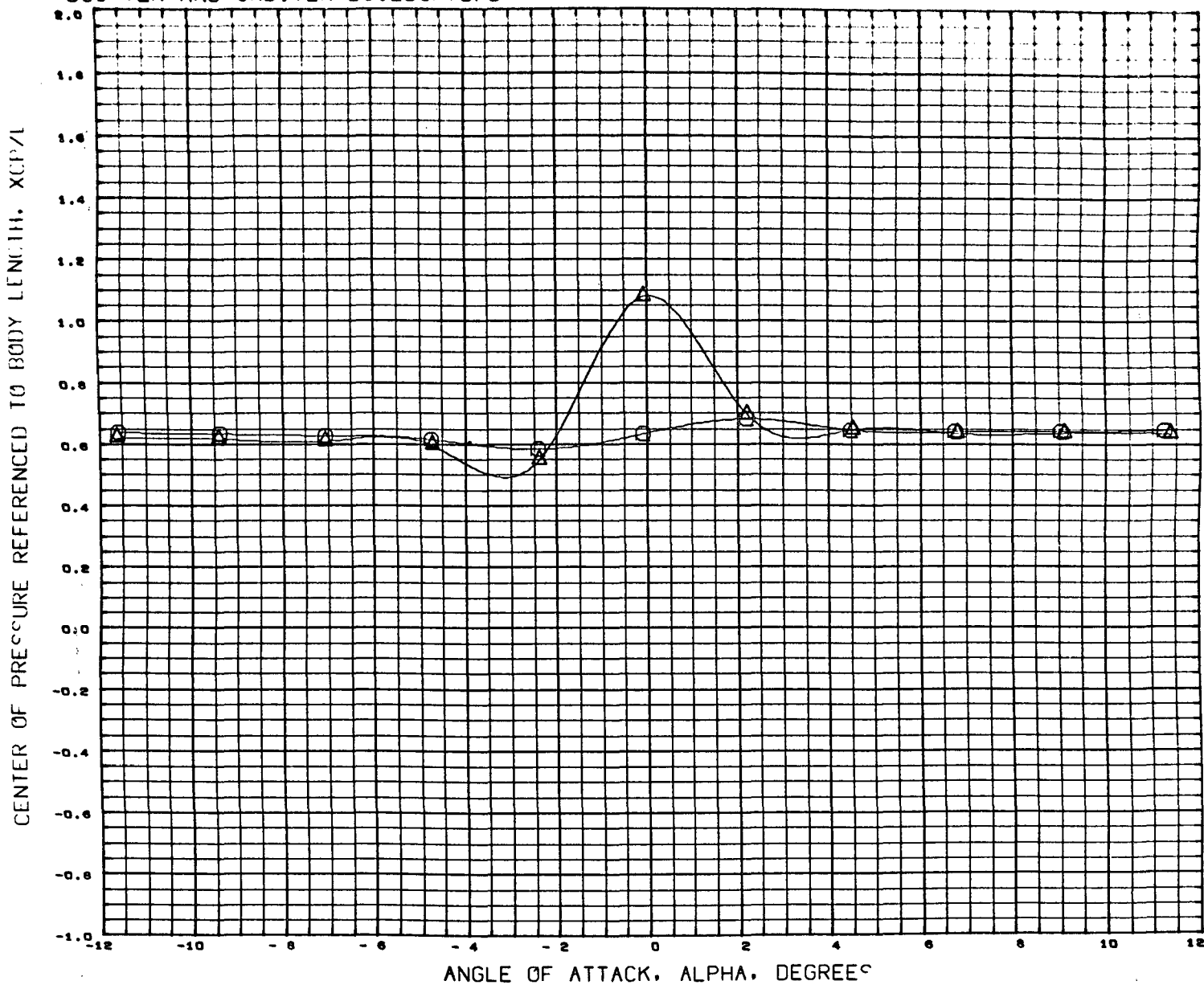
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| (H3248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN |
|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
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| BREF | 6.0690 INCHES |
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| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.100

BOOSTER AND ORBITER BUILDUP.B/B



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

(H3248A) MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

CANARD BETA ELVATR POSITN

0.000 0.000 4.000

0.000 0.000 0.000 4.000

REFERENCE INFORMATION

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BREF 6.0990 INCHES

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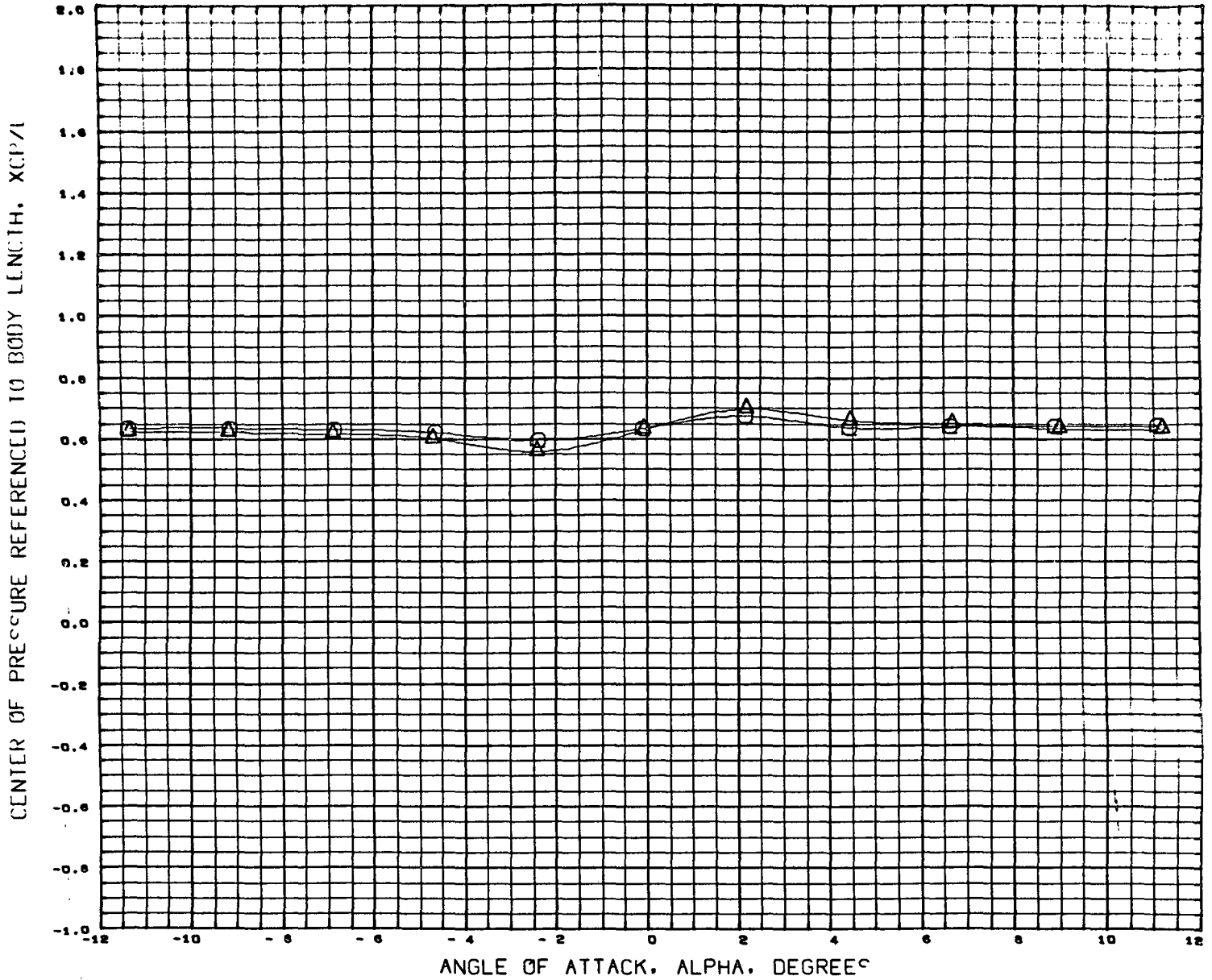
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SCALE 0.0035 SCALE

MACH 1.458

BOOster AND ORBITER BUILDUP, B/B



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3246A) | MSFC490 NR/GD LAUNCH B20W14+B3W17 |
| (H3248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B3W17V17 |

| CANARD | BETA | ELVATR | POSITN |
|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
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| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.963

BOO^oTER AND ORBITER BUILDUP, B/B



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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(H3246A) MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

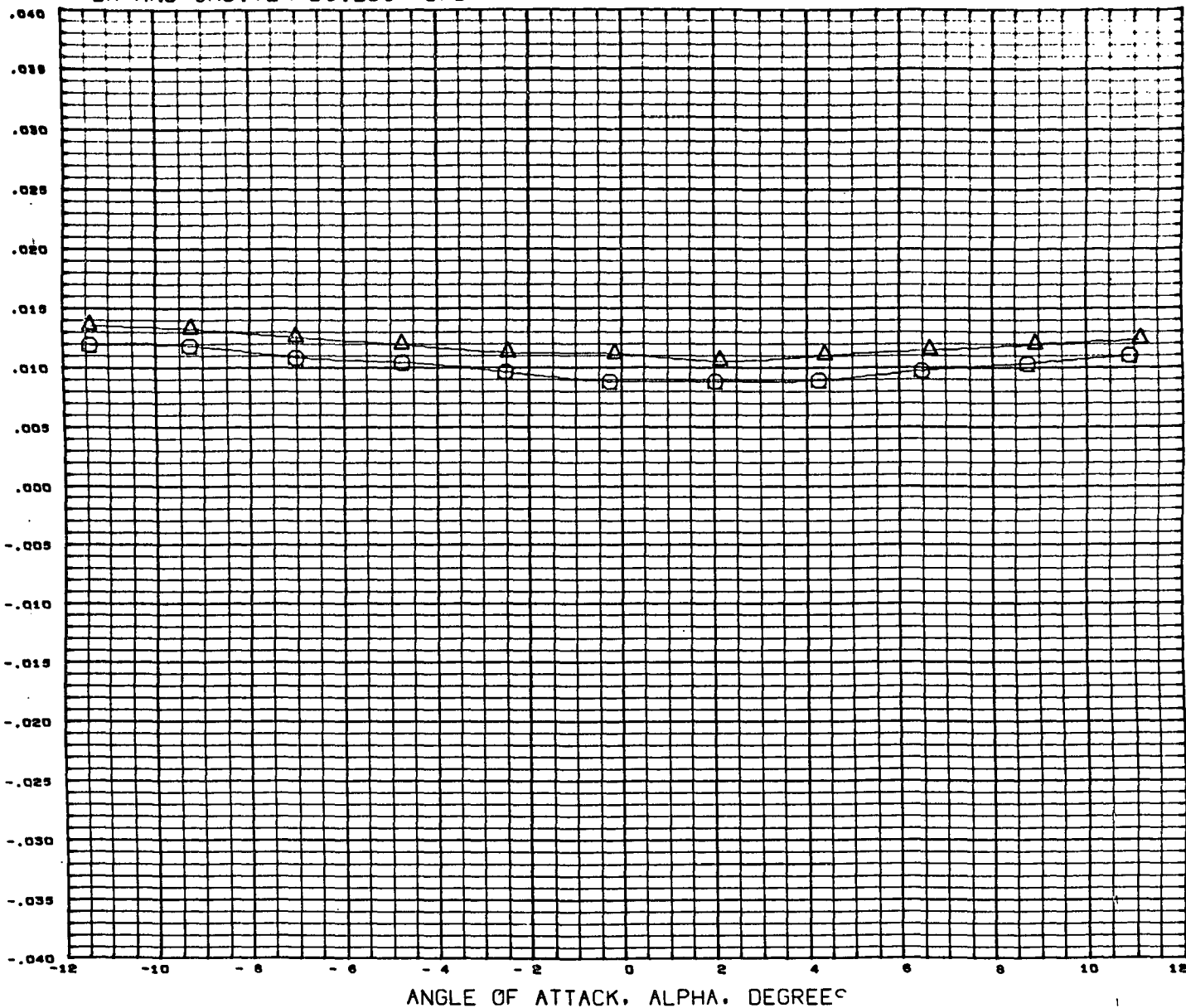
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0.000 0.000 0.000 4.000

REFERENCE INFORMATION
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LREF 3.0950 INCHES
BREF 6.0990 INCHES
XMRP 0.0000
YMRP 0.0000
ZMRP 0.0000
SCALE 0.0035 SCALE

MACH 0.600

BOOSTER AND ORBITER BUILDUP, B/B

BASE AXIAL FORCE COEFFICIENT, C_{AB}



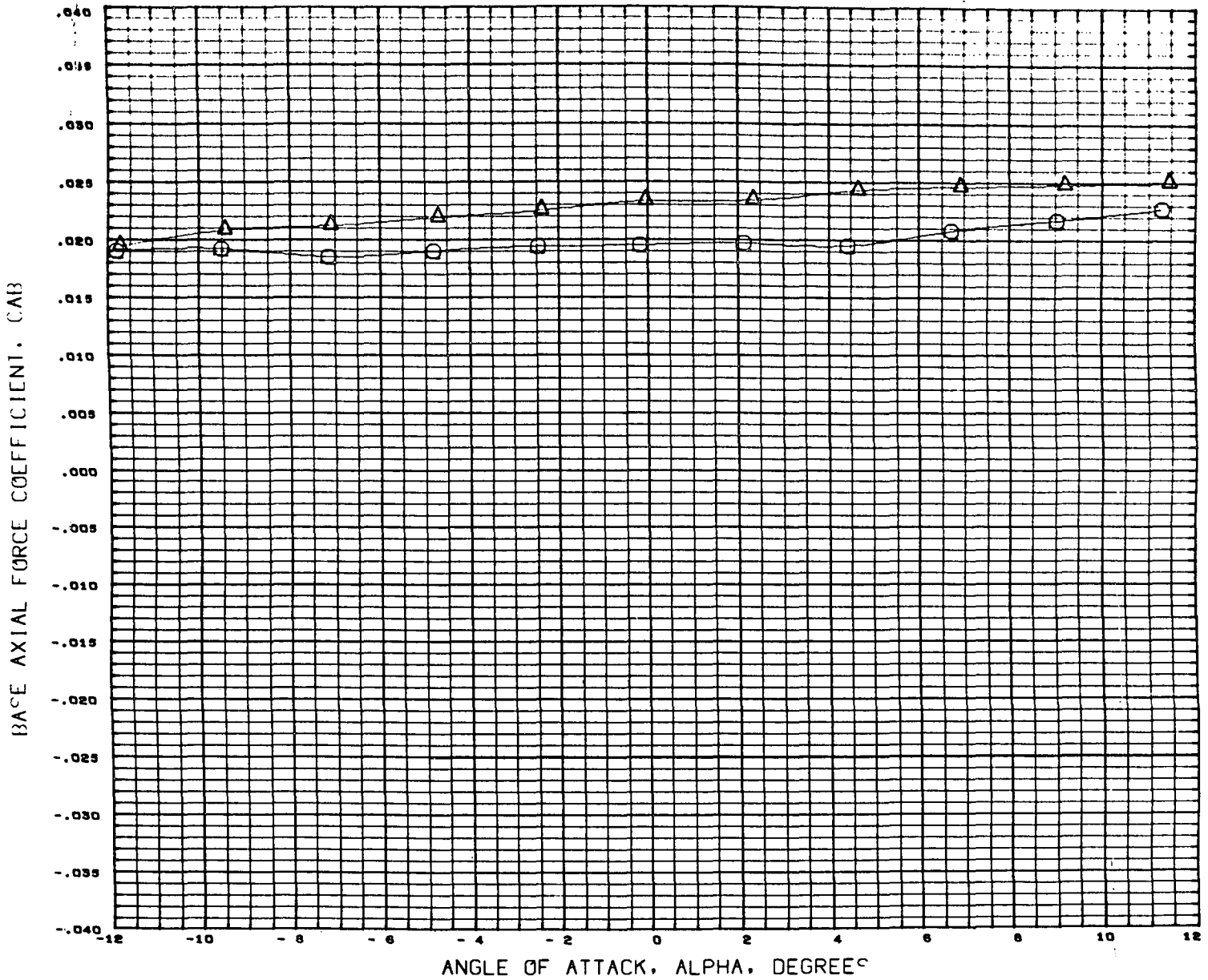
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CANARD BETA ELVATR POSITN
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0.000 0.000 0.000 4.000

REFERENCE INFORMATION
SREF 15.6560 SQ IN
LREF 3.0950 INCHES
BREF 6.0990 INCHES
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YMRP 0.0000
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SCALE 0.0035 SCALE

MACH 0.694

BOOSTER AND ORBITER BUILDUP, B/B



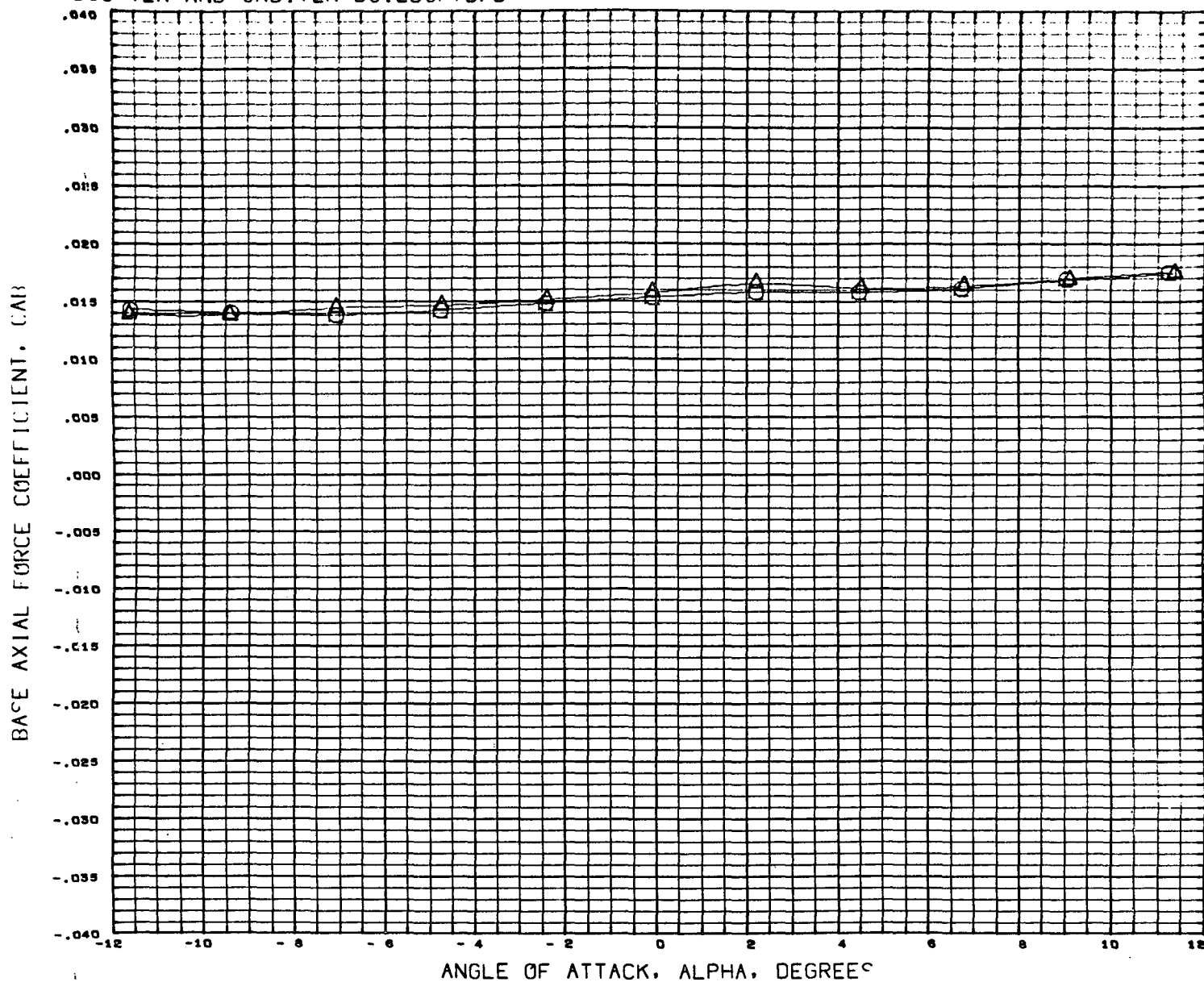
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(H3246B) △ MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

CANARD BETA ELVATR POSITN
0.000 0.000 0.000 4.000

REFERENCE INFORMATION
SREF 15.6560 SQ IN
LREF 3.0950 INCHES
BREF 8.0990 INCHES
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YMRP 0.0000
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SCALE 0.0033 SCALE

MACH 1.100

BOOSTER AND ORBITER BUILDUP, B/B



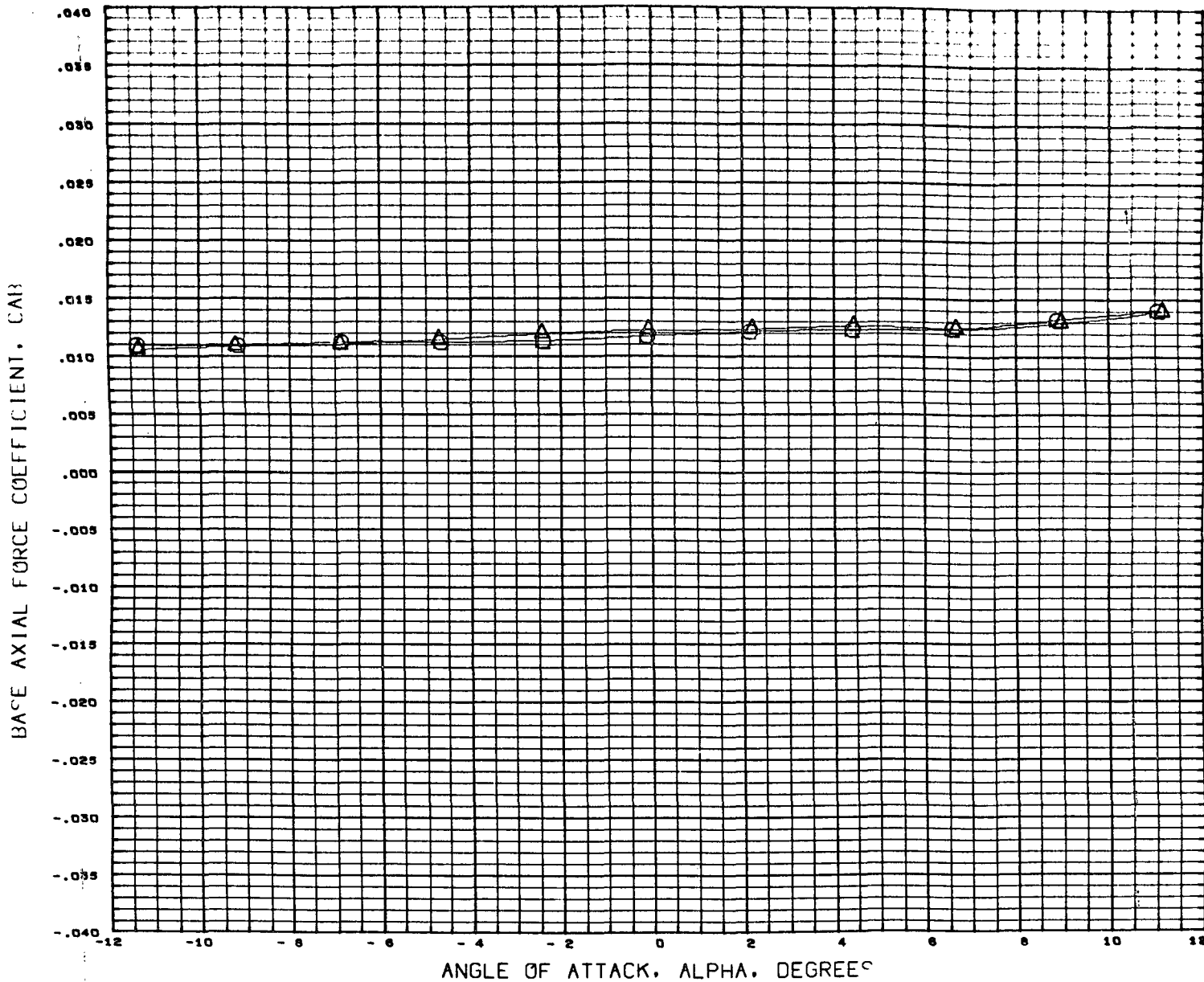
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| CANARD | BETA | ELVATR | POSITN |
|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
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| SCALE | 0.0035 SCALE |

MACH 1.458

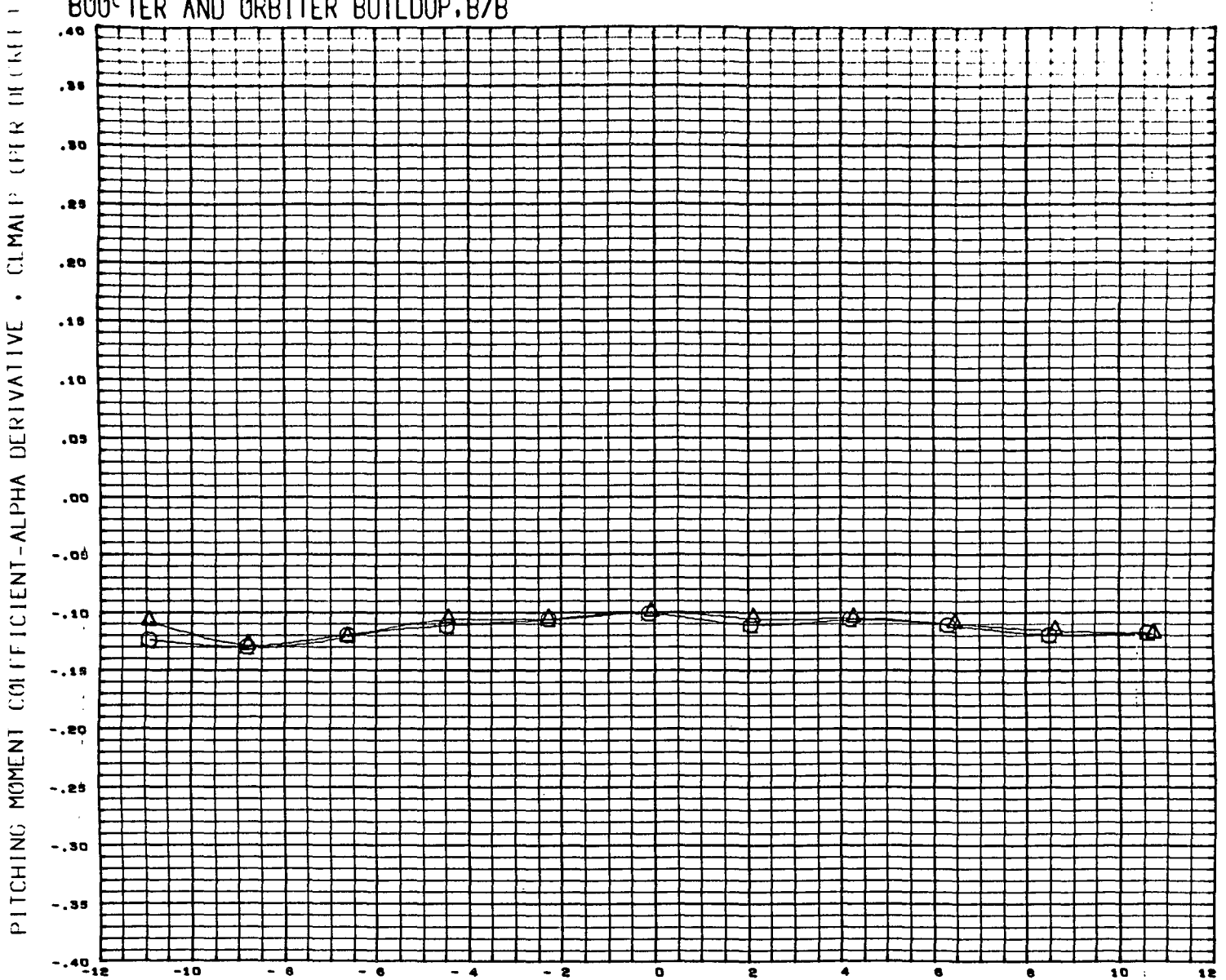
BOOSTER AND ORBITER BUILDUP, B/B



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION | |
|-----------------|---|--------|-------|--------|--------|-----------------------|---------------|
| (H3248A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 | | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (H3248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
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| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
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| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.963

BOOSTER AND ORBITER BUILDUP, B/B



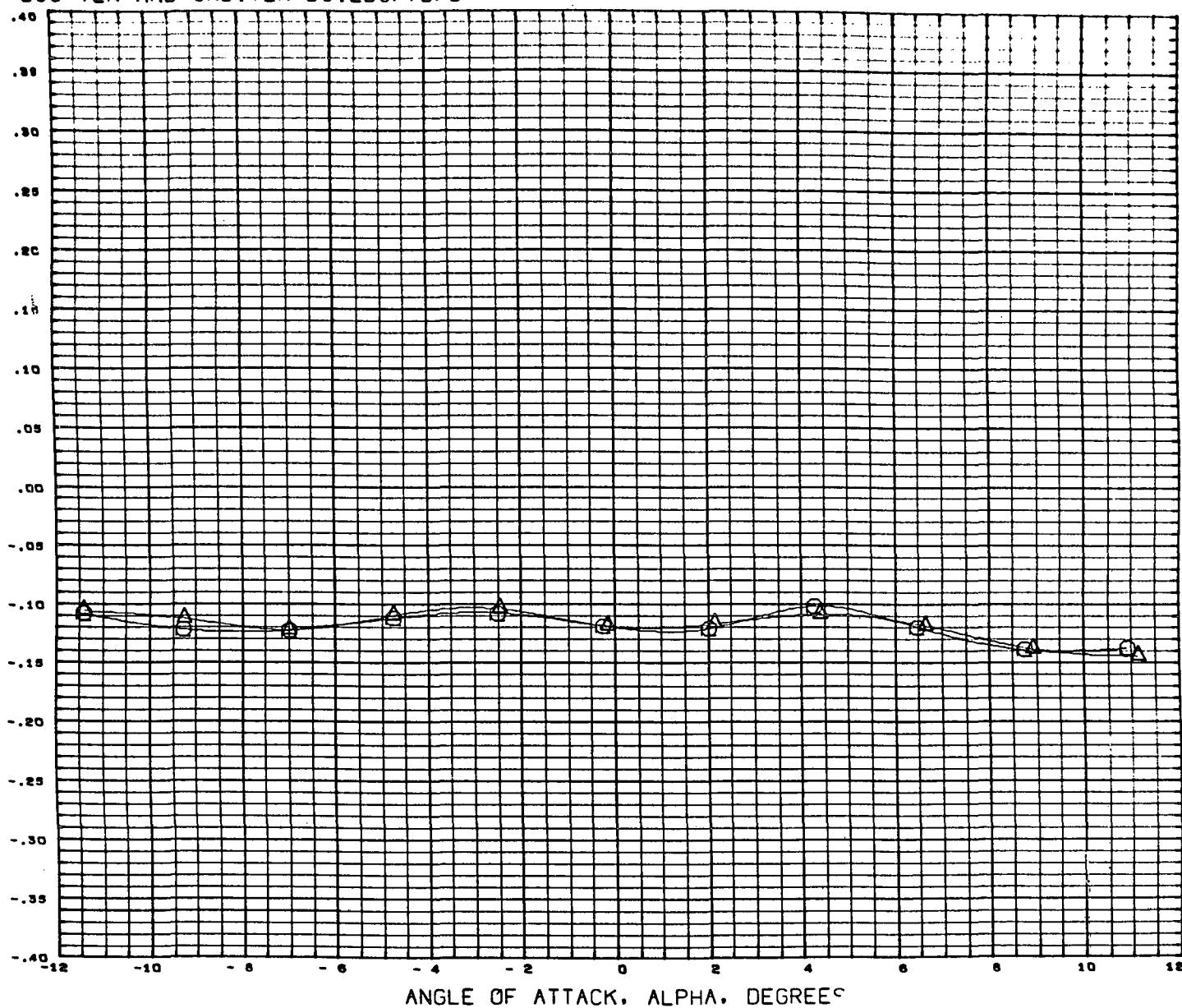
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| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION | |
|--------|-------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| | | | | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.600

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMALP (PER DEGREE)

BOO^{CT}TER AND ORBITER BUILDUP, B/B



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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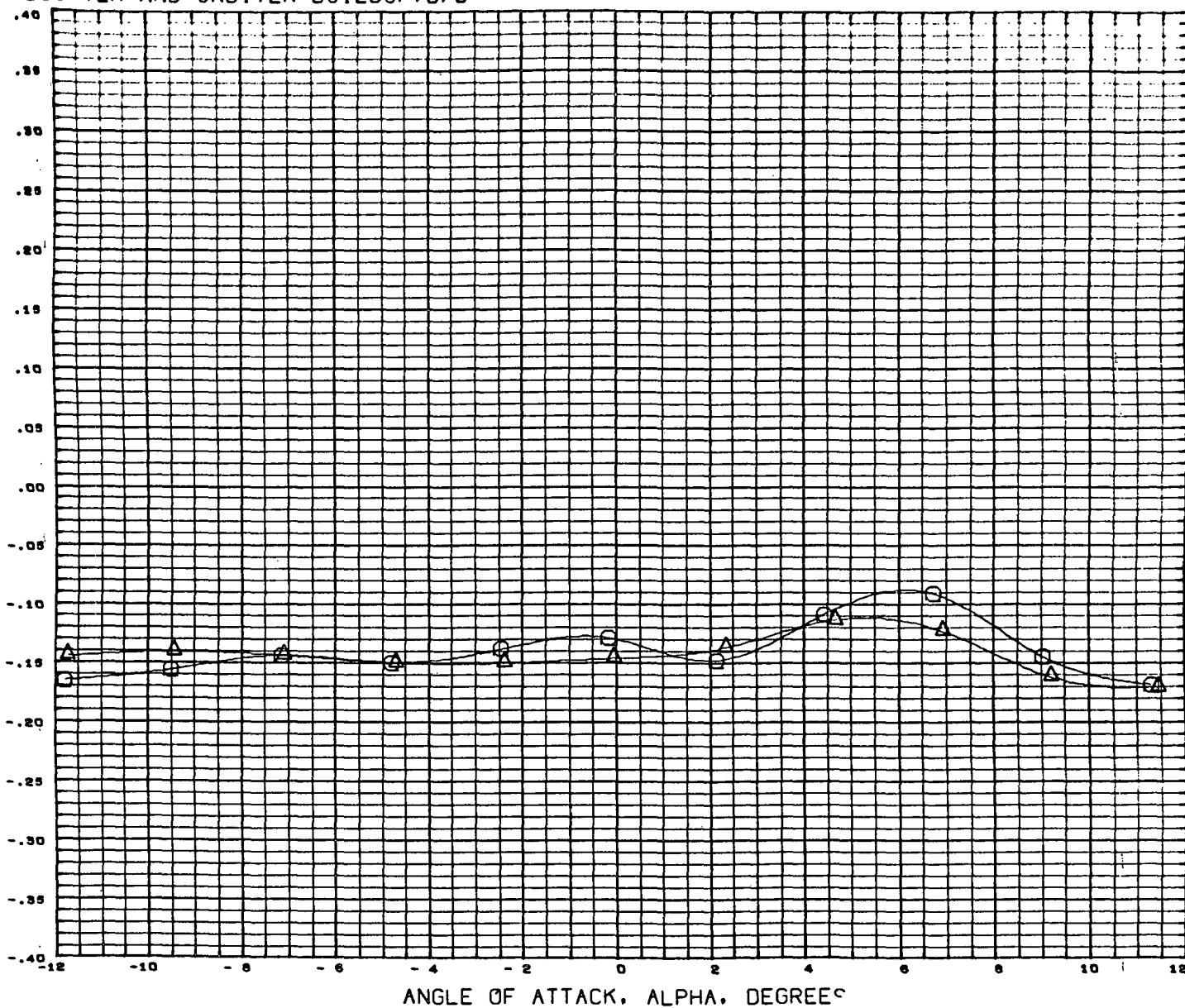
CANARD BETA ELVATR POSITN
0.000 0.000 0.000 4.000
0.000 0.000 0.000 4.000

REFERENCE INFORMATION
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LREF 3.0950 INCHES
BREF 6.0990 INCHES
XMRP 0.0000
YMRP 0.0000
ZMRP 0.0000
SCALE 0.0039 SCALE

MACH 0.894

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - (1/MALP) (PER DEGREE)

BOOSTER AND ORBITER BUILDUP, B/B



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
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| (13246A) △ | MSFC490 NR/GD LAUNCH B20C48W14+B3W17V17 |

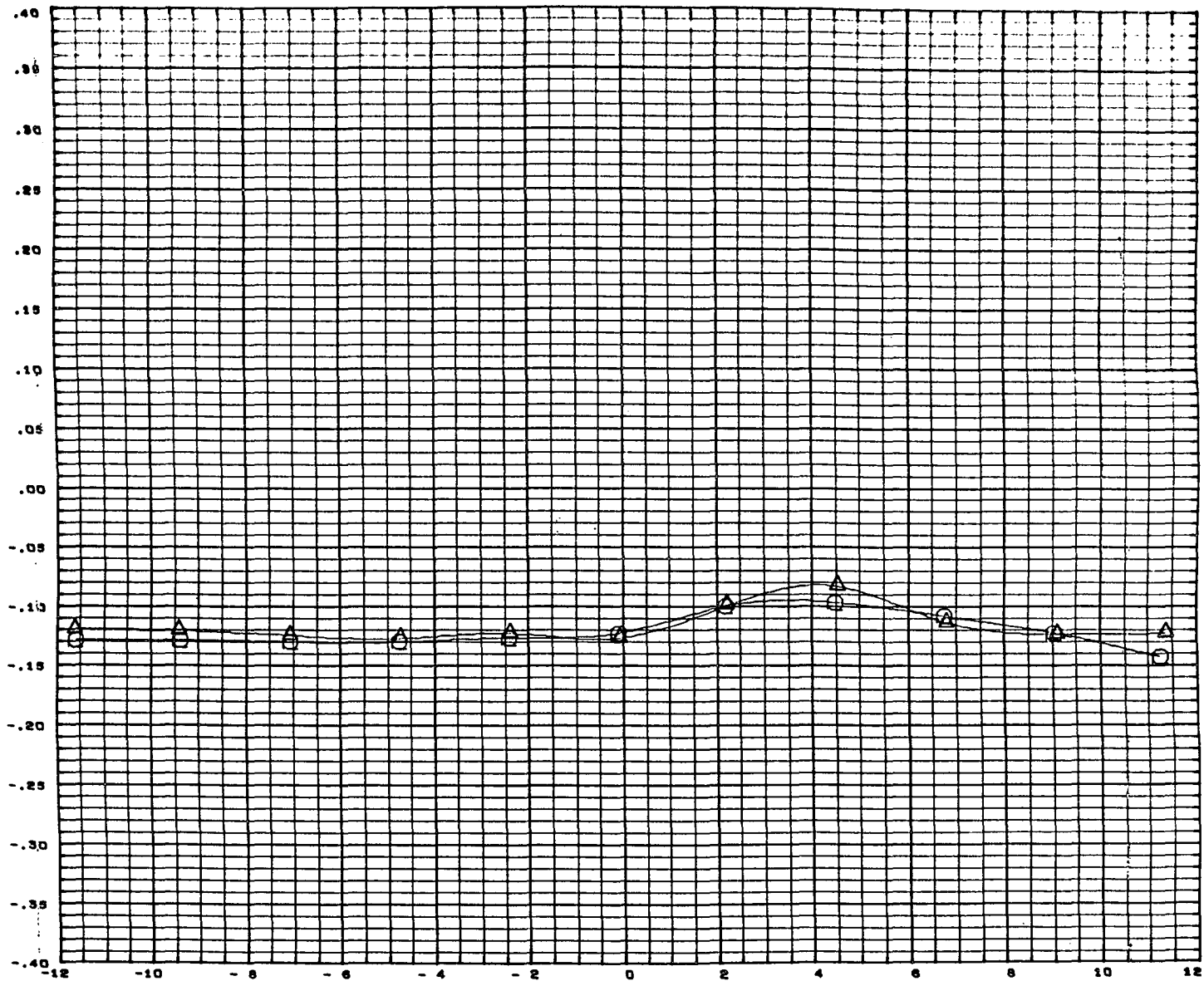
| CANARD | BETA | ELVATR | POSITN |
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| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | |
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| LREF | 3.0950 INCHES |
| BREF | 0.0990 INCHES |
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| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.100

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE, CLMAMP (PER DEGREE)

BOOSTER AND ORBITER BUILDUP, B/B



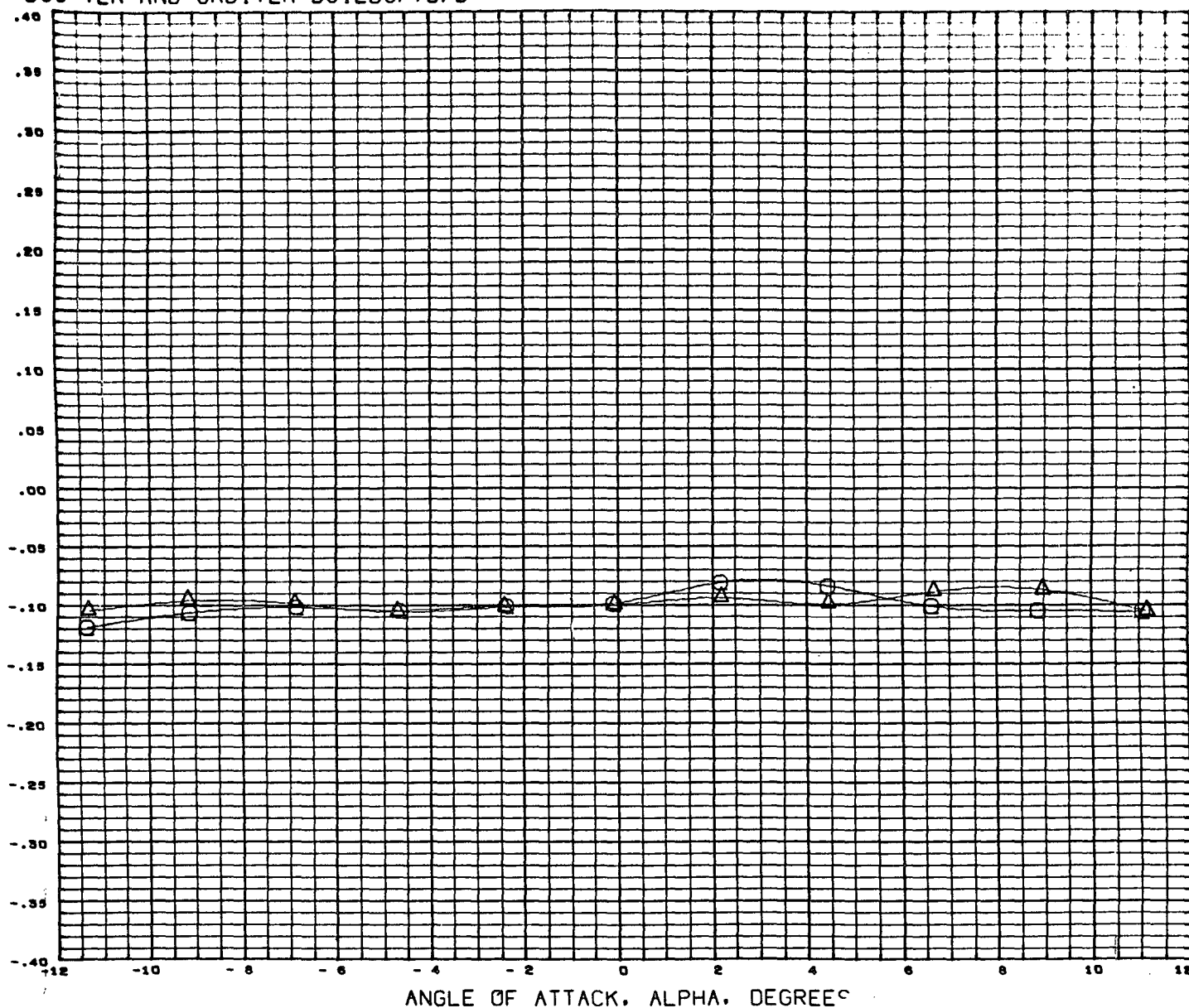
ANGLE OF ATTACK, ALPHA, DEGREE°

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION | |
|-----------------|---|--------|-------|--------|--------|-----------------------|---------------|
| (13246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 | | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (13248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0039 SCALE |

MACH 1.458

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMALP (PER DEGREE)

BOOster AND ORBITER BUILDUP, B/B



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN |
|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.963

BOOSTER AND ORBITER BUILDUP, B/B

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREE^S

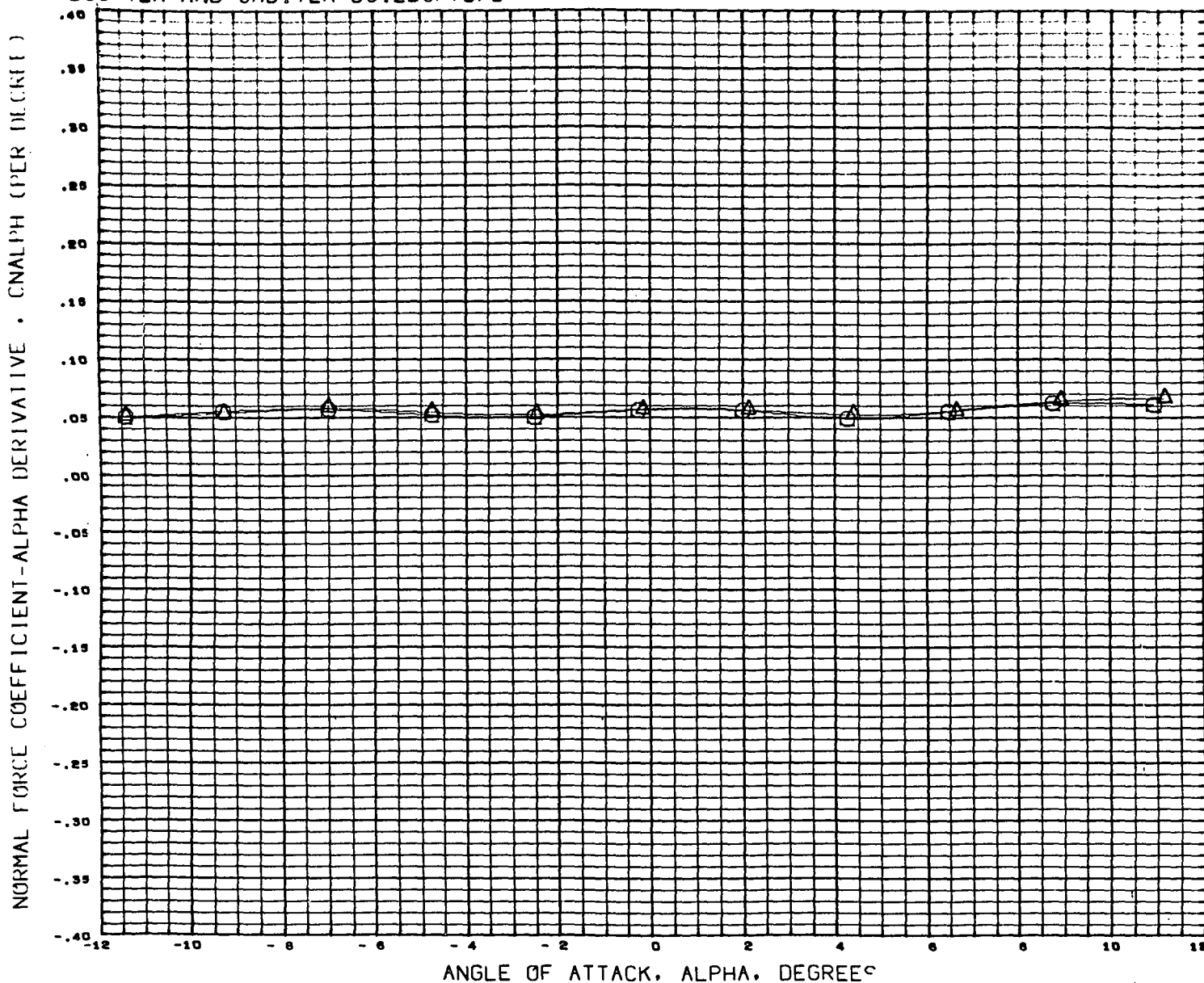
DATA SET SYMBOL CONFIGURATION DESCRIPTION
(13246A) MSFC490 NR/GD LAUNCH B20W14+B5W17
(13246A) MSFC490 NR/GD LAUNCH B20C48W14+B5W17V17

CANARD BETA ELVATR POSITN
0.000 0.000 0.000 4.000
0.000 0.000 0.000 4.000

REFERENCE INFORMATION
SREF 15.6560 SQ IN
LREF 3.0950 INCHES
BREF 6.0990 INCHES
XMRP 0.0000
YMRP 0.0000
ZMRP 0.0000
SCALE 0.0039 SCALE

MACH 0.600

BOOSTER AND ORBITER BUILDUP, B/B



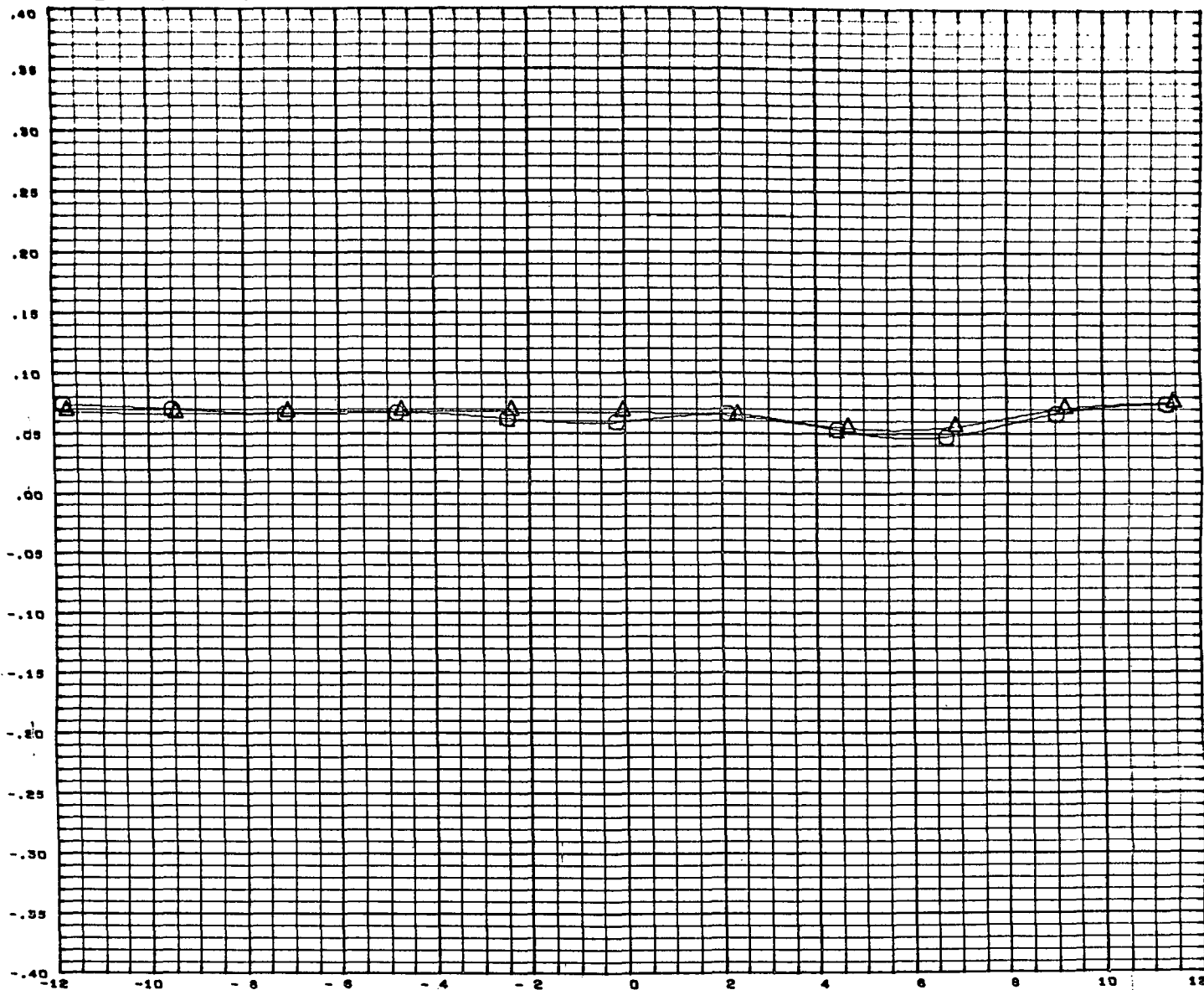
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (13248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION |
|--------|-------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| | | | | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.894

BOOster AND ORBITER BUILDUP, B/B

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CANARD (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREES

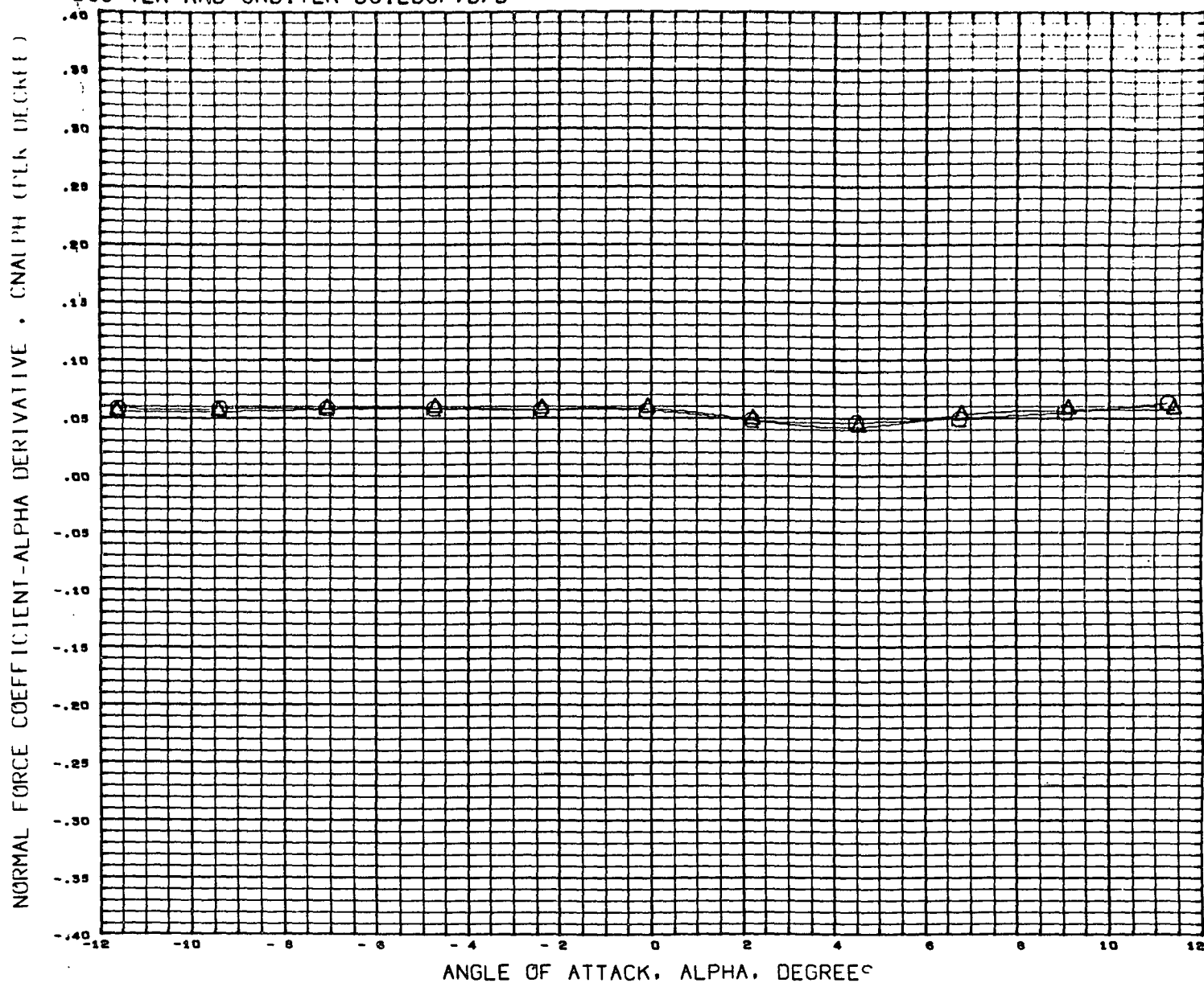
DATA SET SYMBOL CONFIGURATION DESCRIPTION
(13248A) MSFC490 NR/GD LAUNCH B20W14+B5W17
(13248A) MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

| CANARD | BETA | ELVATR | POSITN |
|--------|-------|--------|--------|
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | 50 IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0033 | SCALE |

MACH 1.100

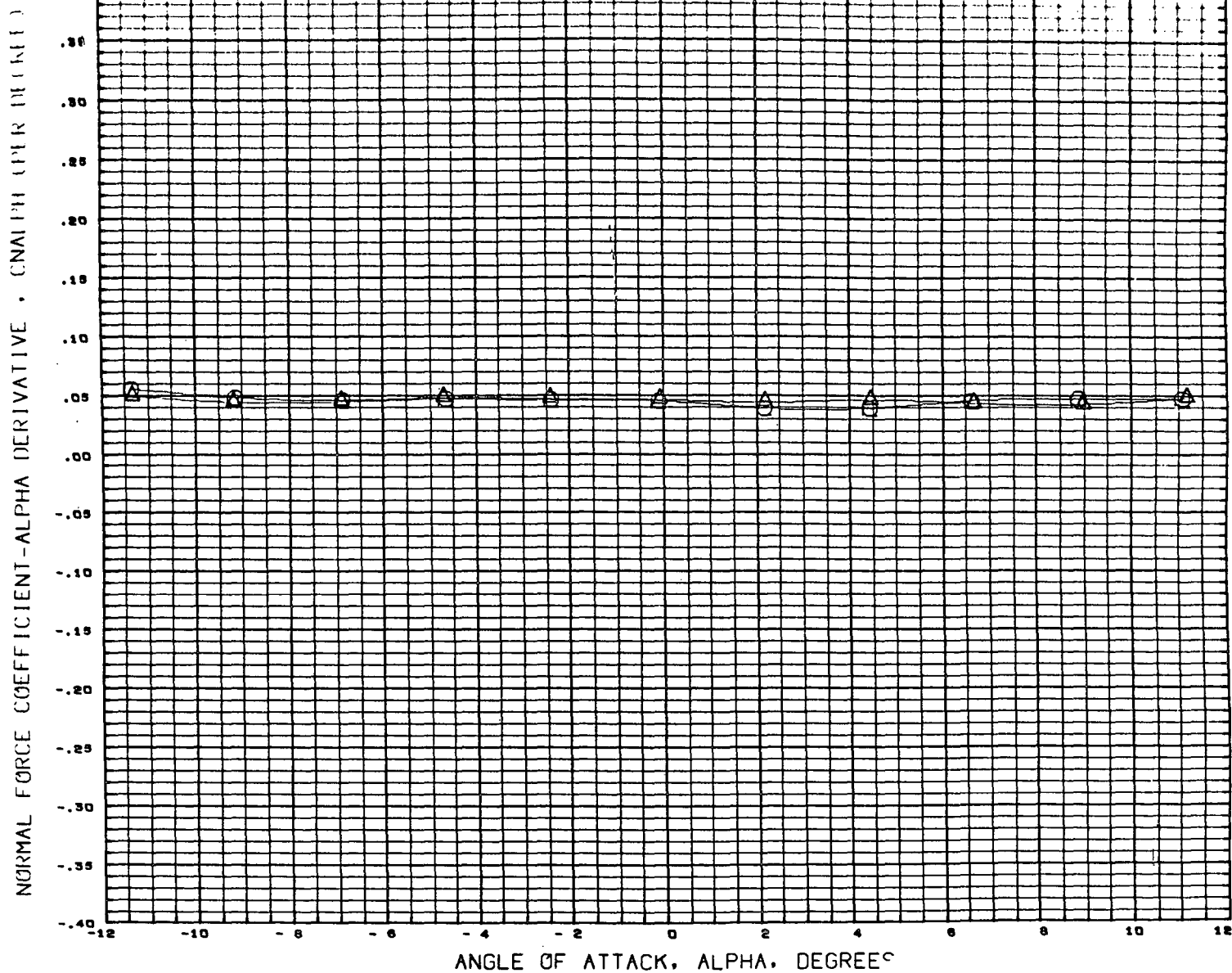
BOO^{STER} AND ORBITER BUILDUP, B/B



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION | |
|-----------------|---|--------|-------|--------|--------|-----------------------|---------------|
| (13246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 | 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| (13246A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.458

BOOSTER AND ORBITER BUILDUP, B/B



DATA SET SYMBOL CONFIGURATION DESCRIPTION
(13246A) MSFC490 NR/GD LAUNCH B20W14+B5W17
(13248A) MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

CANARD BETA ELVATR POSITN
0.000 0.000 0.000 4.000
0.000 0.000 0.000 4.000

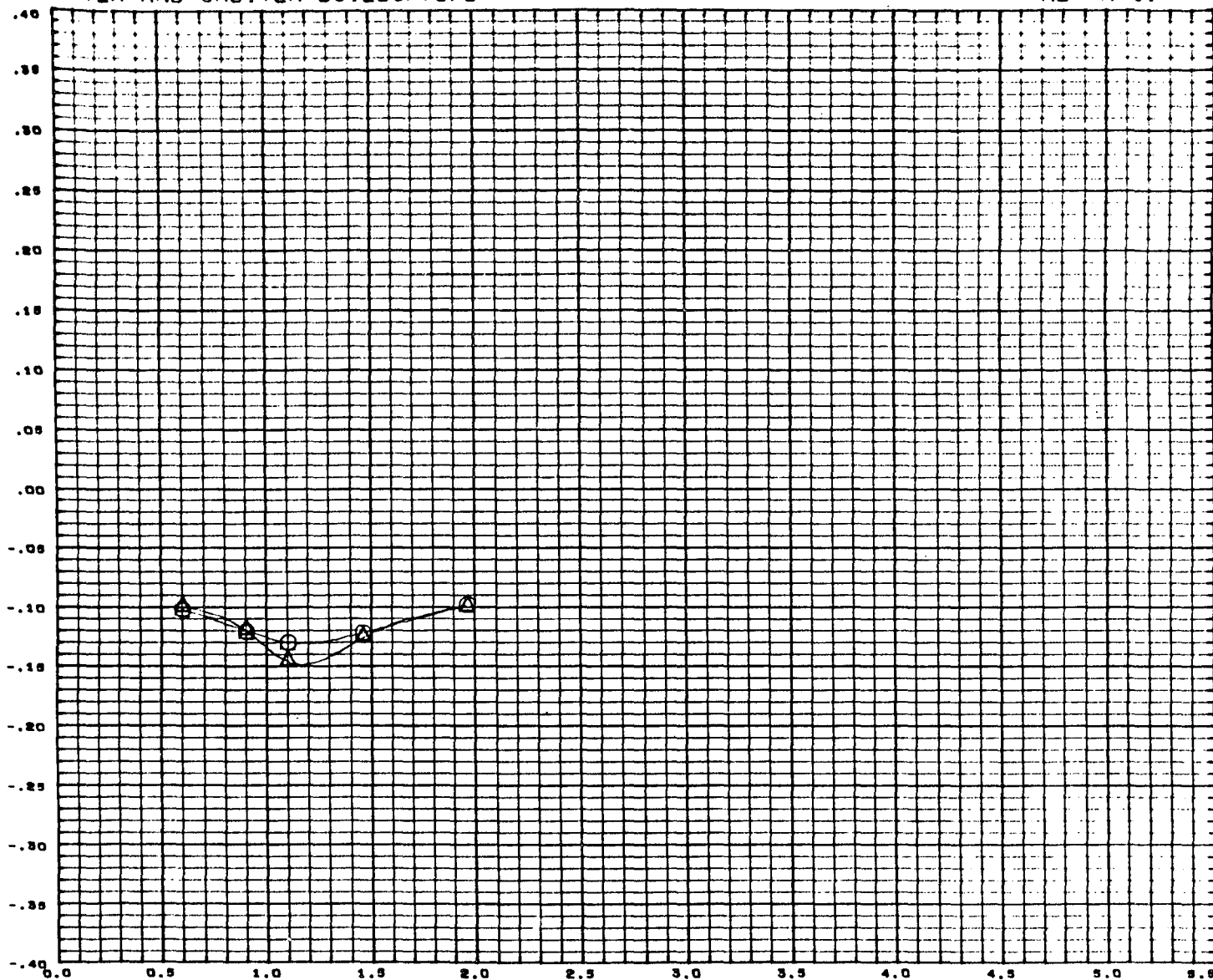
REFERENCE INFORMATION
SREF 15.6560 SQ IN
LREF 3.0950 INCHES
BREF 6.0990 INCHES
XMRP 0.0000
YMRP 0.0000
ZMRP 0.0000
SCALE 0.0035 SCALE

MACH 1.963

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAMP (PER DEGREE)

BOOSTER AND ORBITER BUILDUP, B/B

ALPHA=0.



MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (J3246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (J3246A) | MSFC490 NR/GD LAUNCH B20C48W14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION |
|--------|-------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

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BOOSTER AND ORBITER BUILDUP, B/B

ALPHA=0.

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CANARD (PER DEGREE)



MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (J3246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (J3248A) | MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17 |

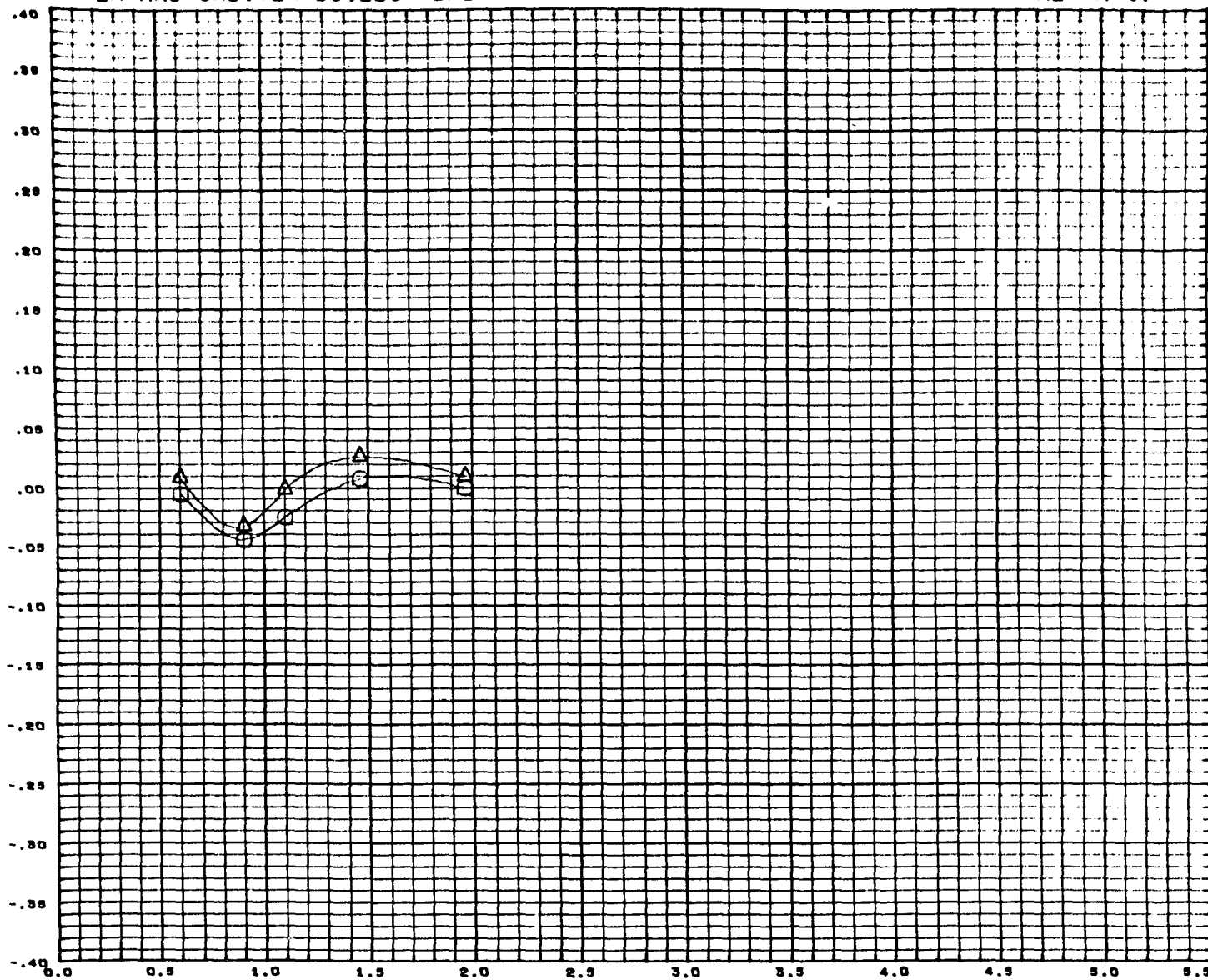
| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION |
|--------|-------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

BOOSTER AND ORBITER BUILDUP.B/B

ALPHA=0.

NORMAL FORCE COEFFICIENT, CN



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(K3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17
(K3246A) MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

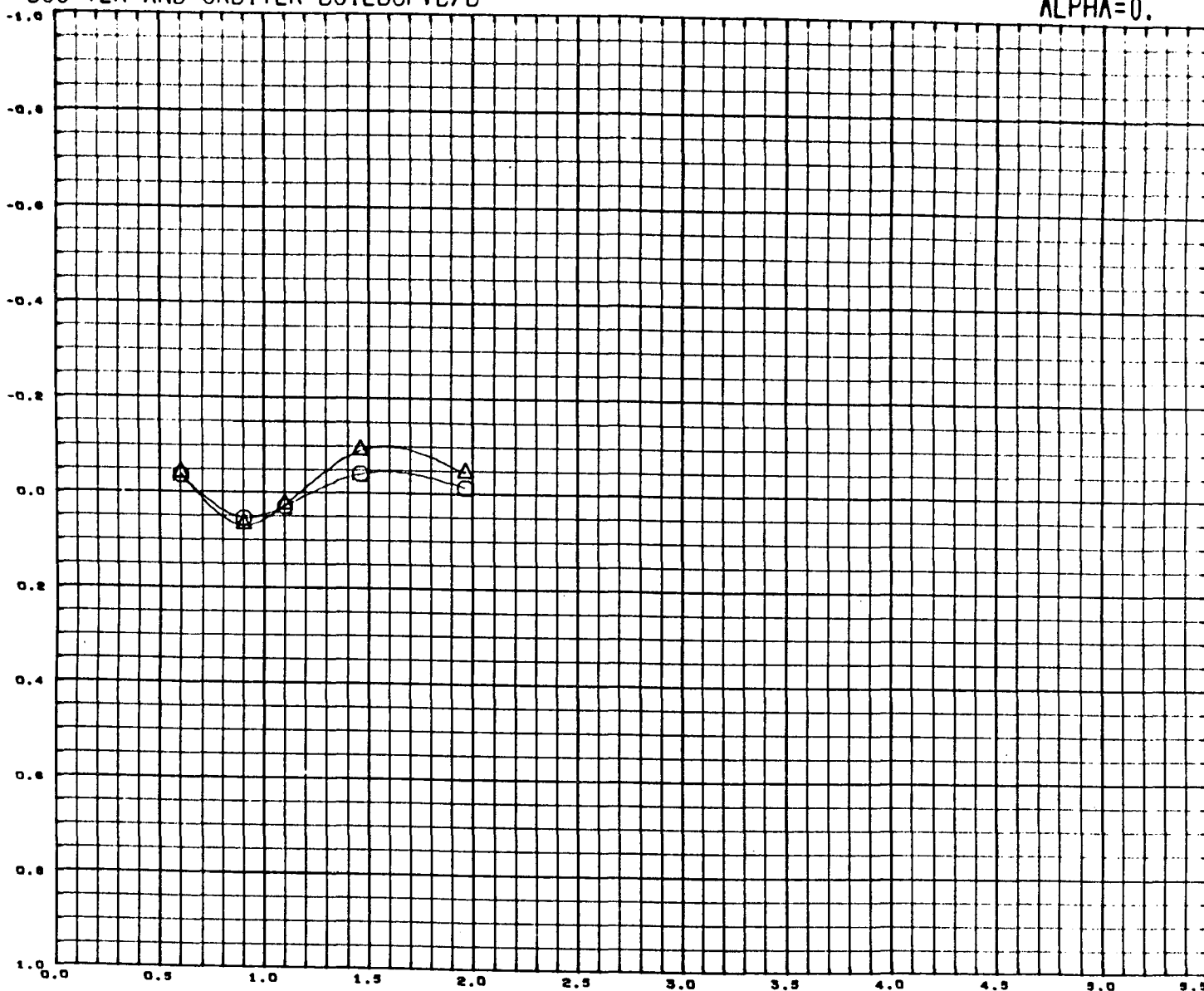
| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION | |
|--------|-------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| | | | | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

BOOSTER AND ORBITER BUILDUP, B/B

ALPHA=0.

PITCHING MOMENT COEFFICIENT, CLM



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3248A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (K3248A) MSFC490 NR/GD LAUNCH B20C4BW14+B5W17V17

ALPHA 0.000

MACH NUMBER

| CANARD | BETA | ELVATR | POSTTN | REFERENCE INFORMATION | |
|--------|-------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF | 15.6560 SQ IN |
| | | | 4.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

BOOster AND ORBITER BUILDUP, B/B

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



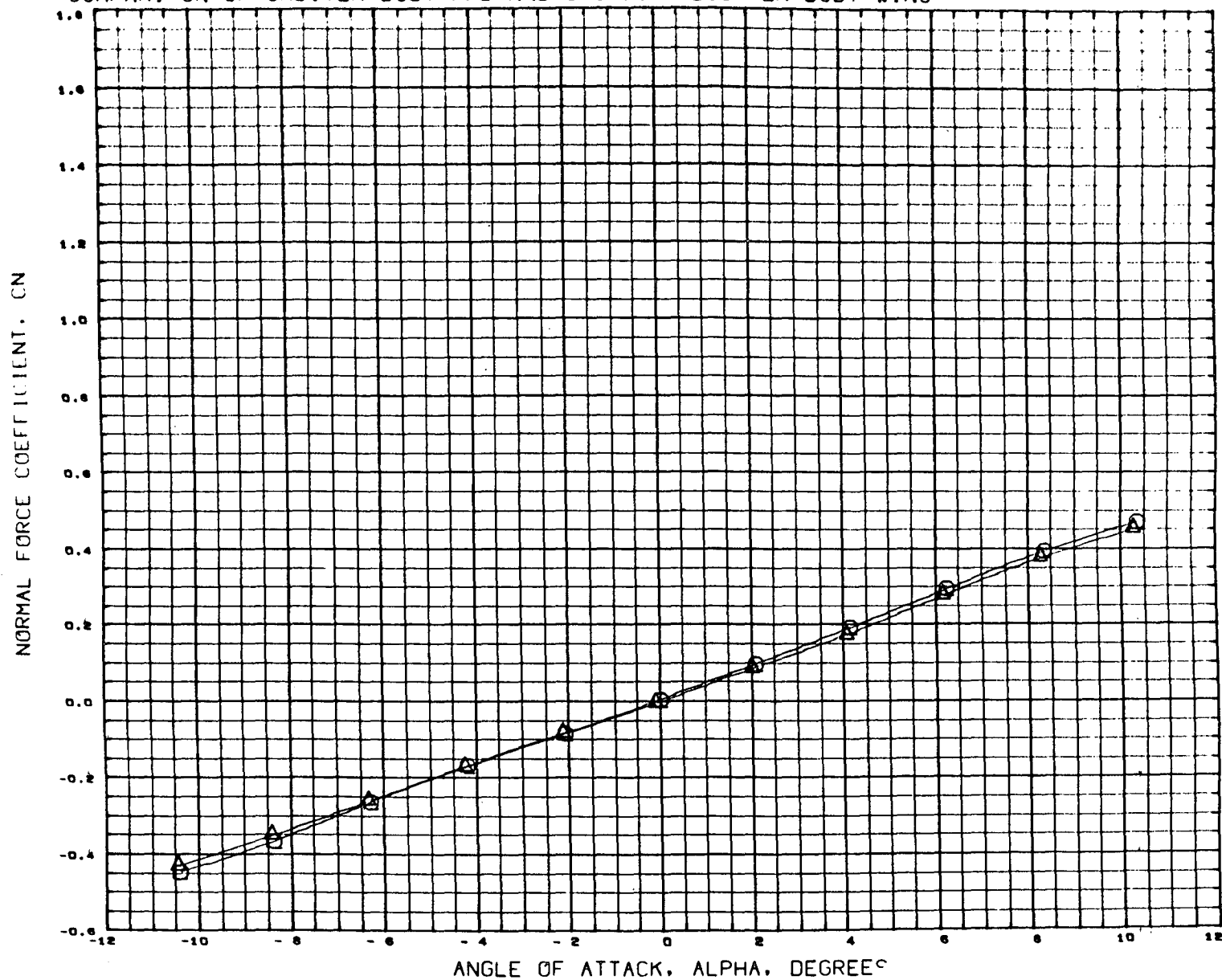
MACH NUMBER

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (K3246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (K3249A) | MSFC490 NR/GD LAUNCH B20C4EW14+B5W17V17 |

| CANARD | BETA | ELVATR | POSITN | REFERENCE INFORMATION |
|--------|-------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 4.000 | SREF 15.6560 SQ IN |
| | | | | LREF 3.0930 INCHES |
| | | | | BREF 6.0930 INCHES |
| | | | | XMRF 0.0000 |
| | | | | YMRF 0.0000 |
| | | | | ZMRF 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



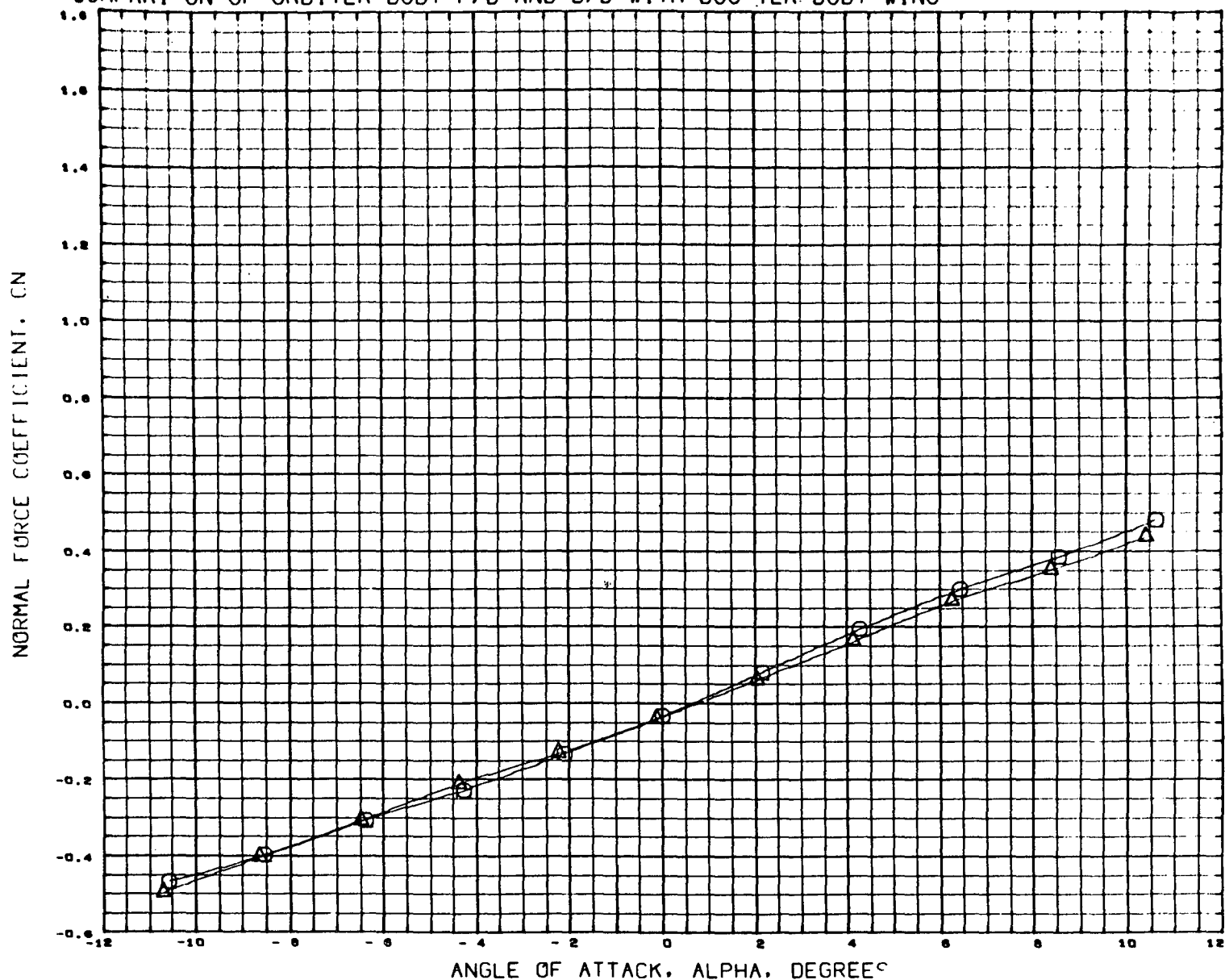
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 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.601

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

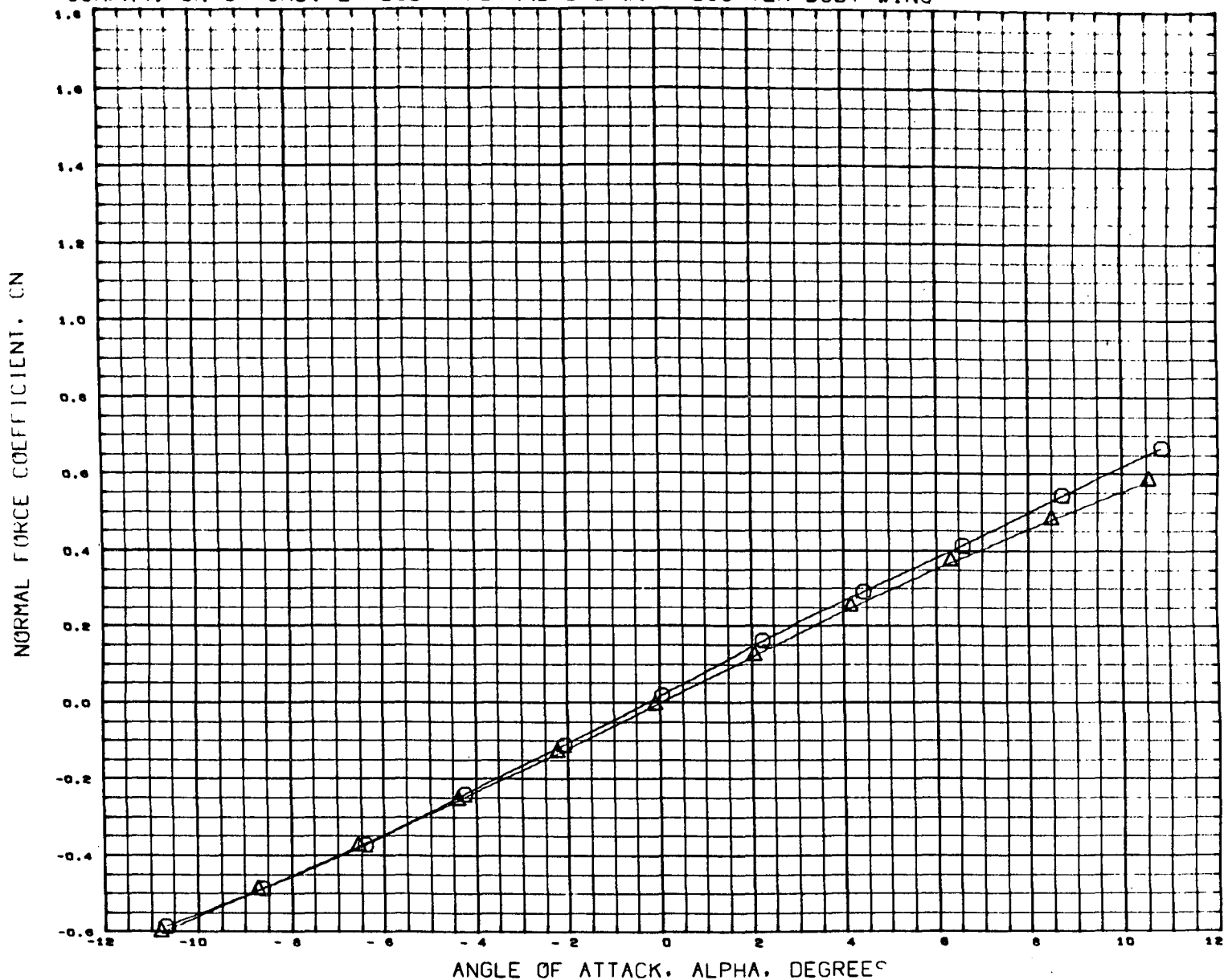


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3243A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION |
|--------|--------|-------|--------|-----------------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0031 SCALE |

MACH 0.899

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



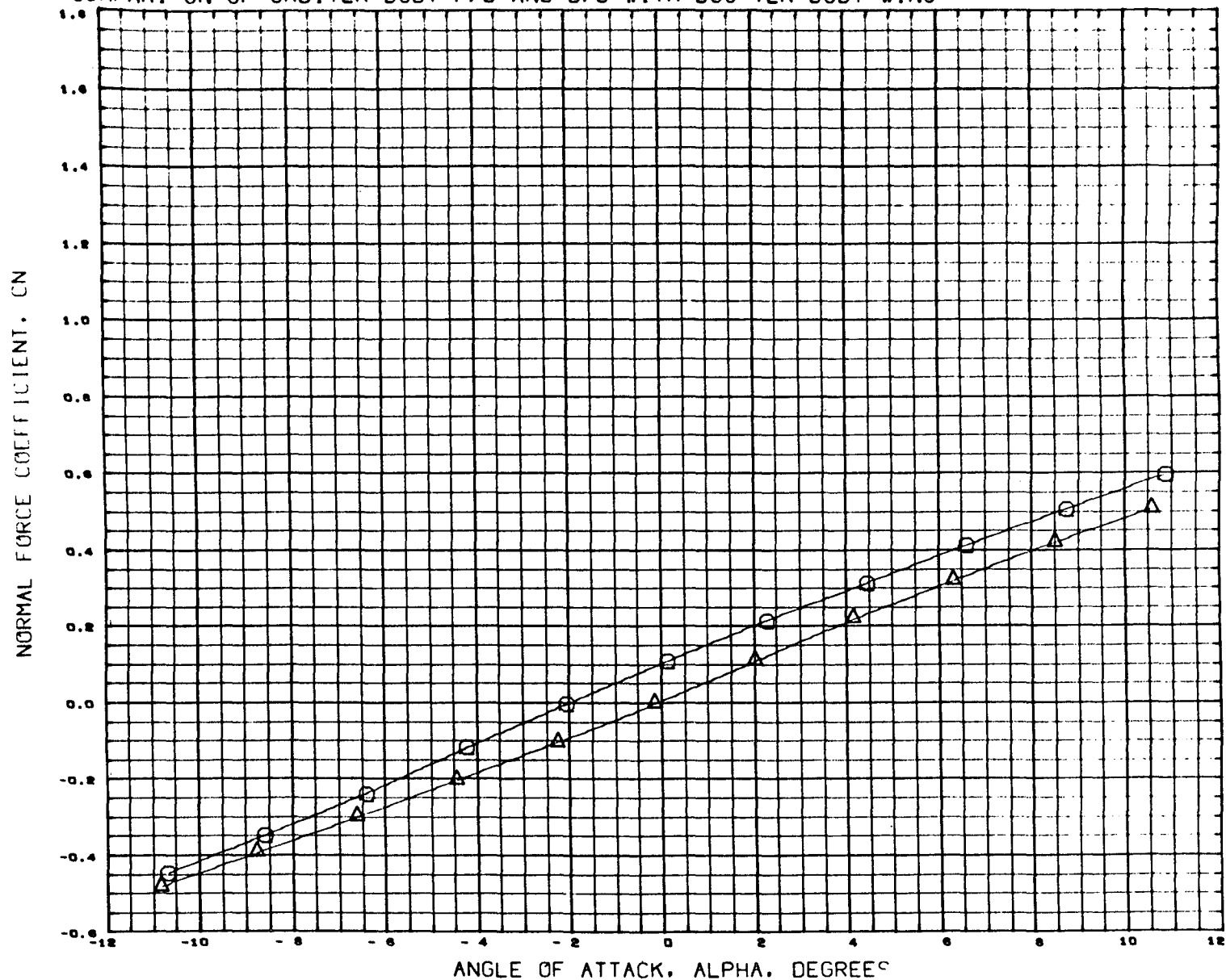
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) ○ MSFC490 NR/GD LAUNCH B20W14+B5
 (H3245A) Δ MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | 50 IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.095

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

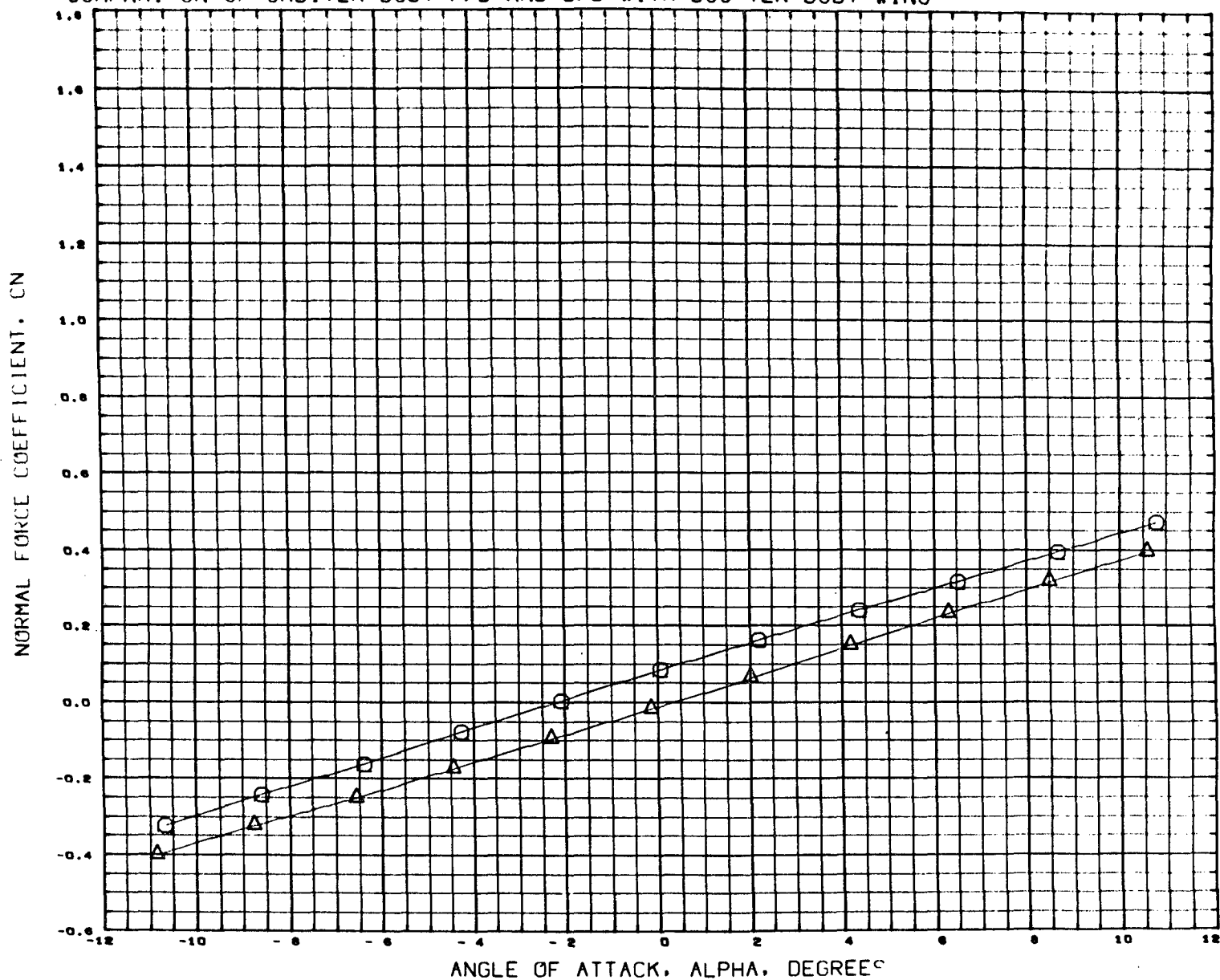


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
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| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.468

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

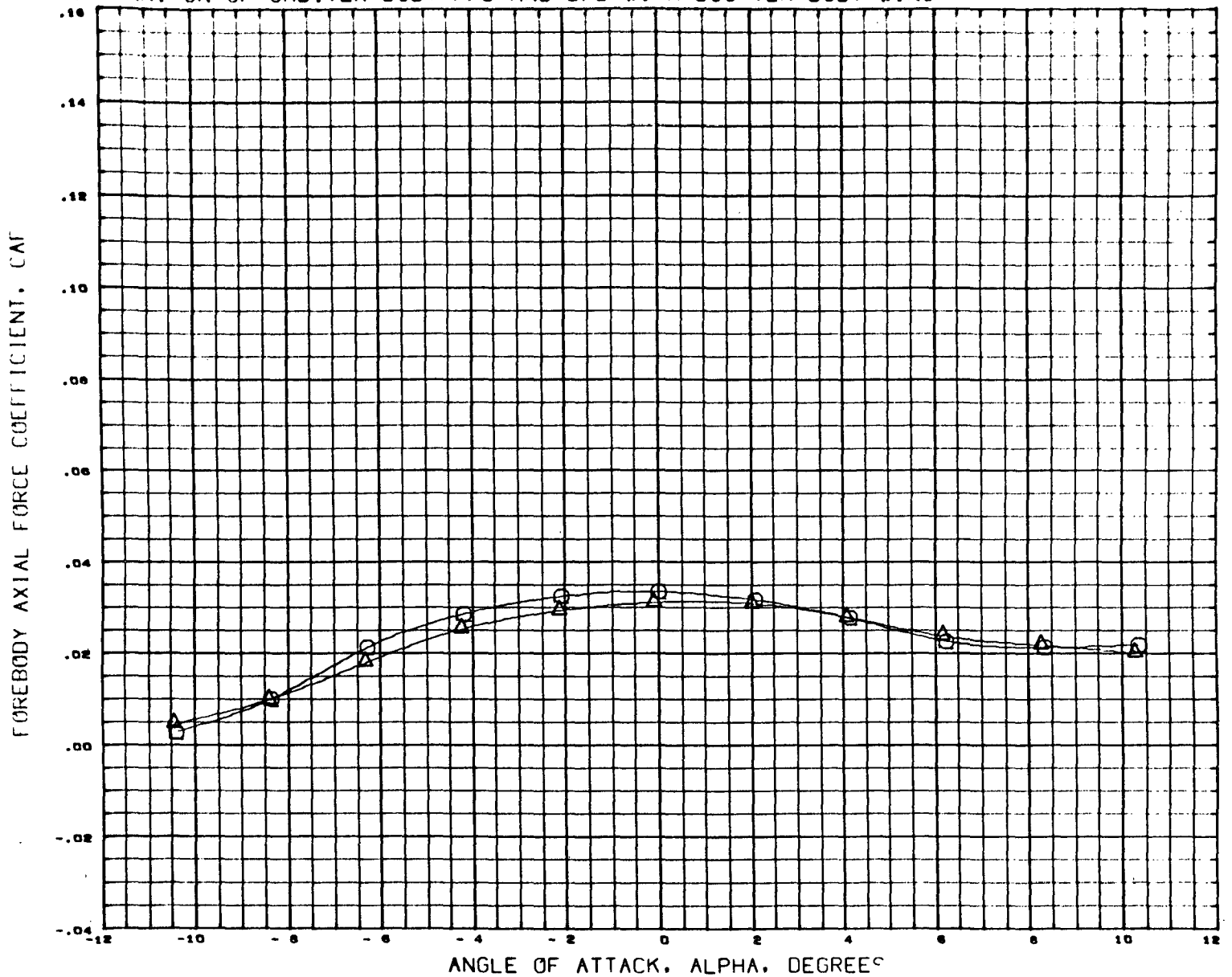


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBITN | POSITN | BETA | ELVATR | REFERENCE INFORMATION |
|--------|--------|-------|--------|-----------------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0950 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.959

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

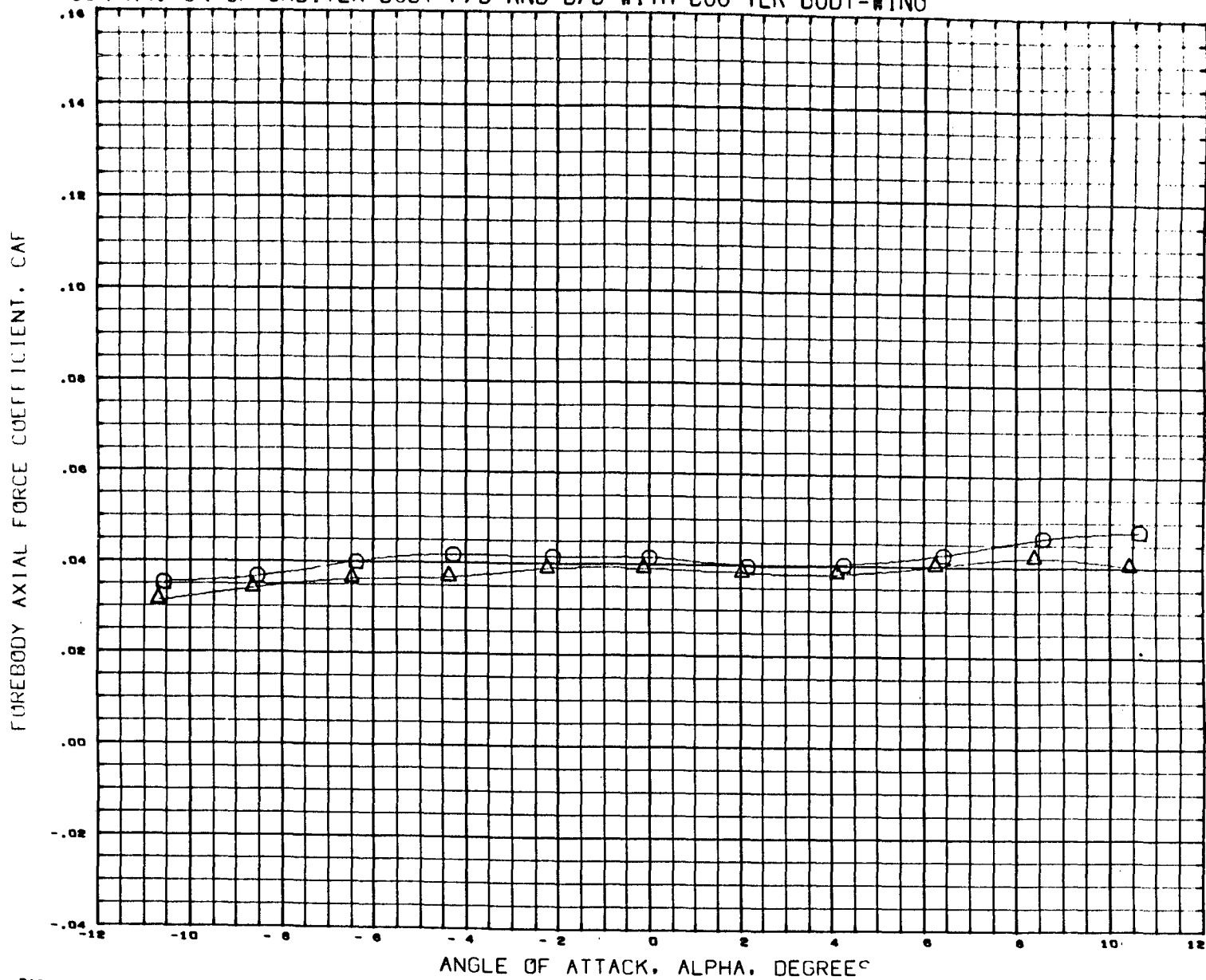


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.001

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



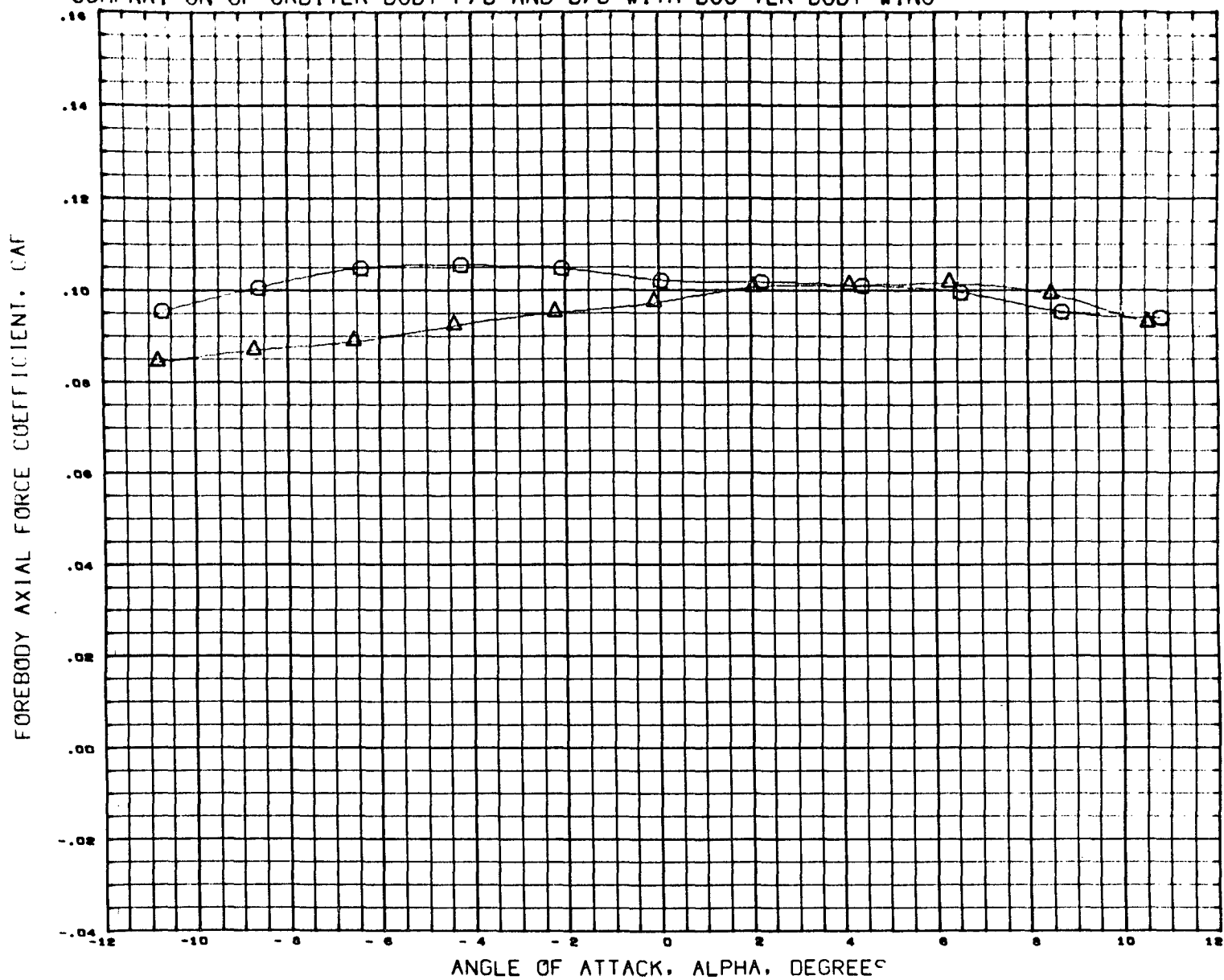
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B3

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.899

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.095

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



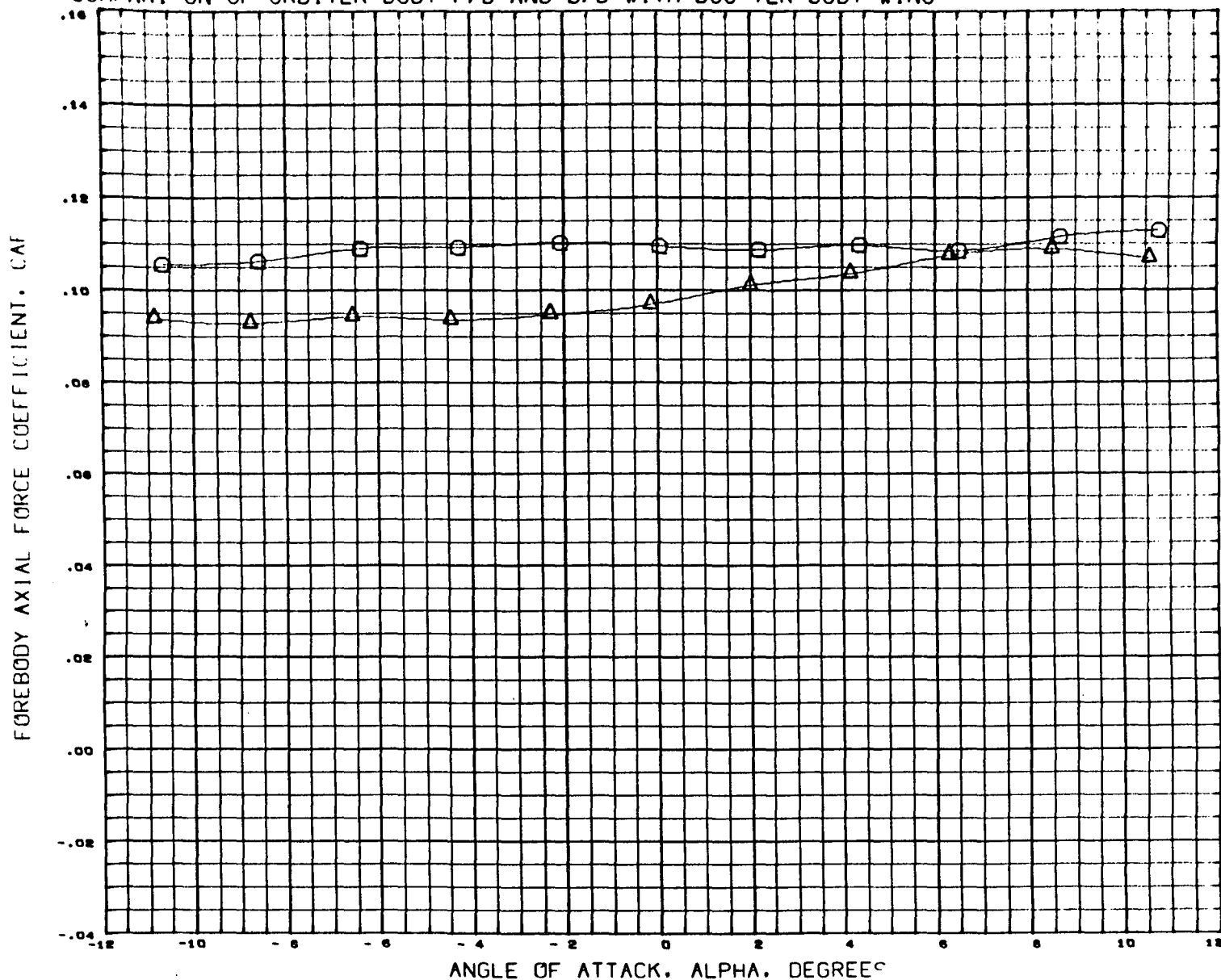
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B5

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.468

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

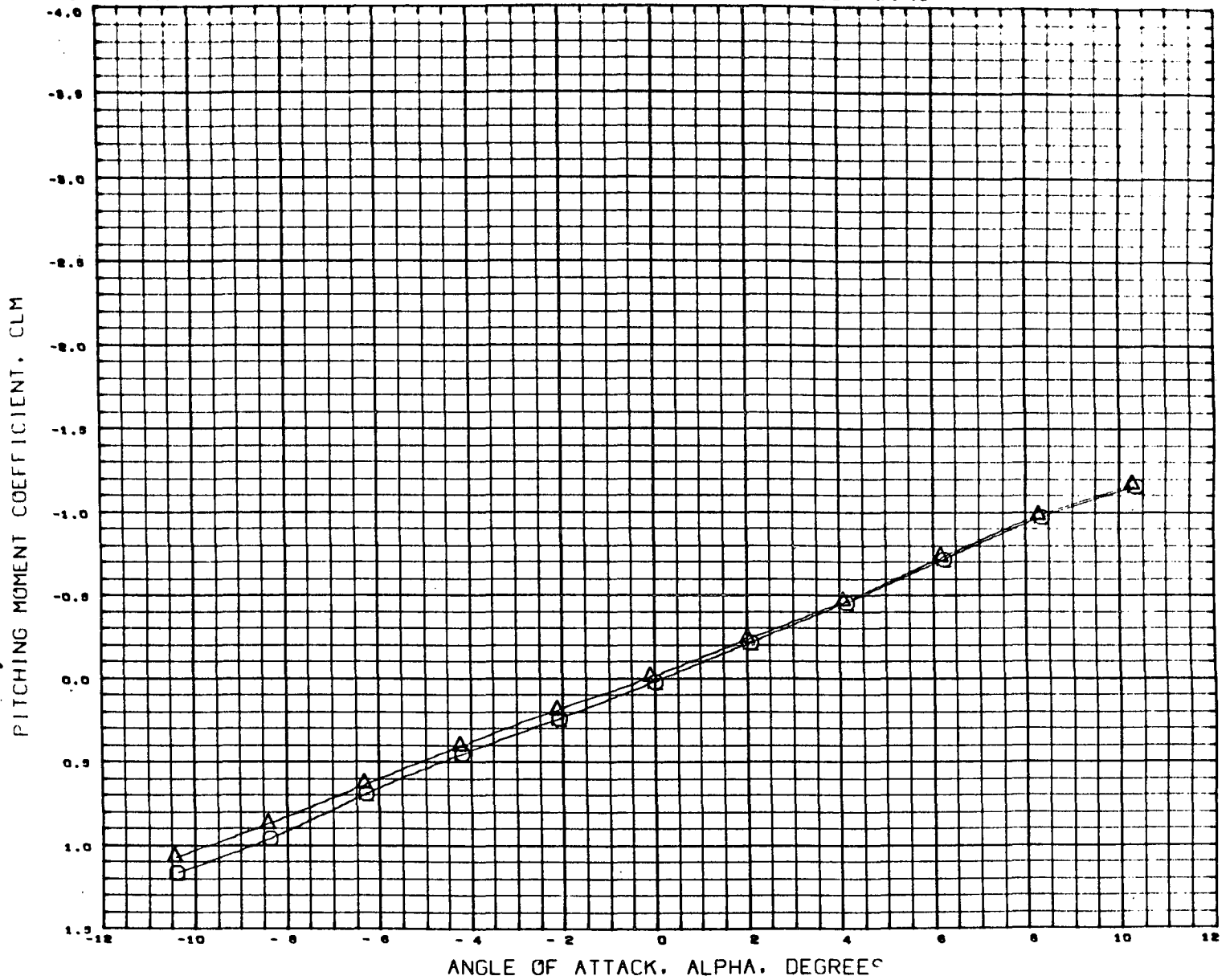


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | | |
|--------|--------|-------|--------|-----------------------|---------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 | 50 IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 | INCHES |
| | | | | BREF | 0.0990 | INCHES |
| | | | | XMRP | 0.0000 | |
| | | | | YMRP | 0.0000 | |
| | | | | ZMRP | 0.0000 | |
| | | | | SCALE | 0.0035 | SCALE |

MACH 1.959

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



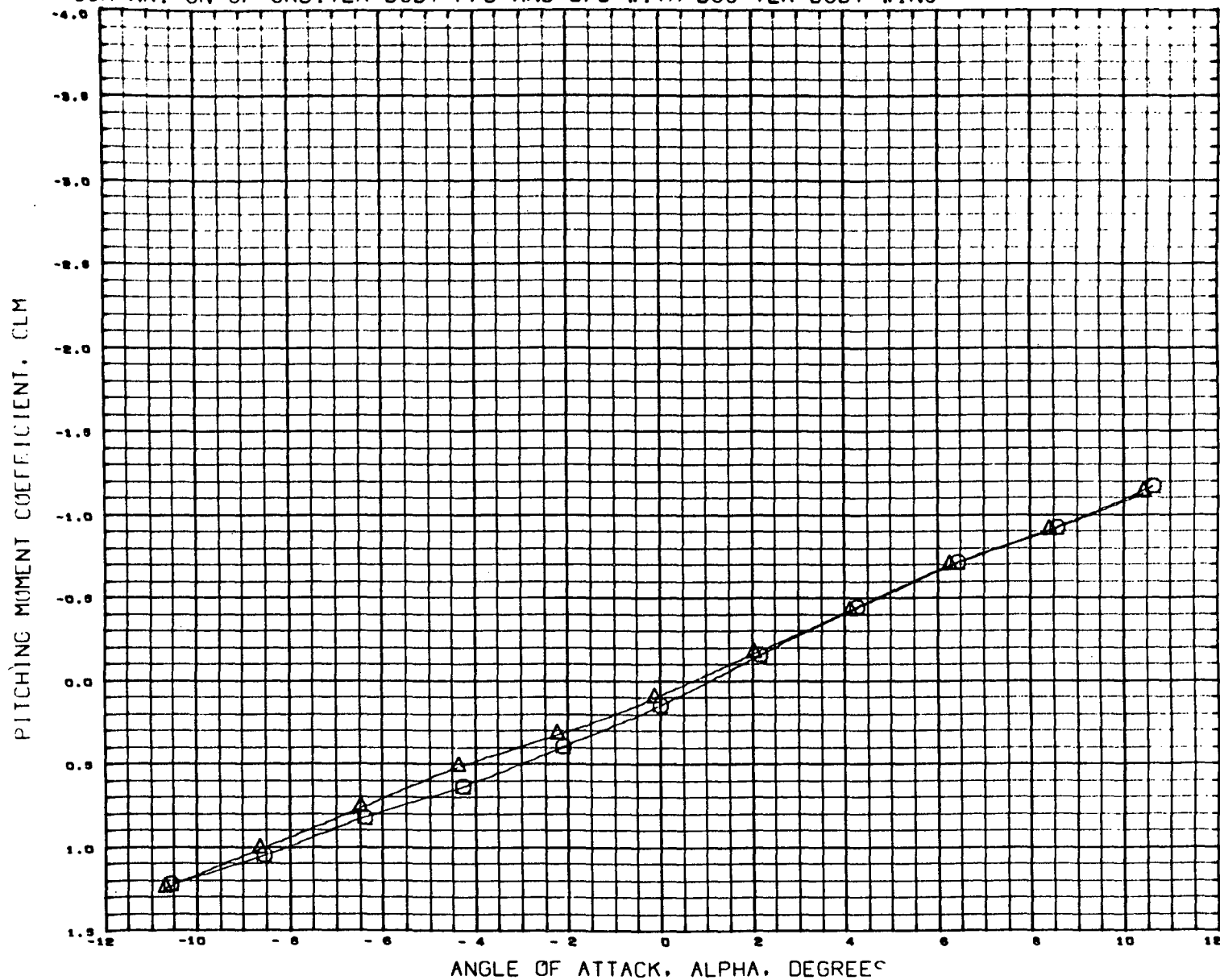
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.601

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

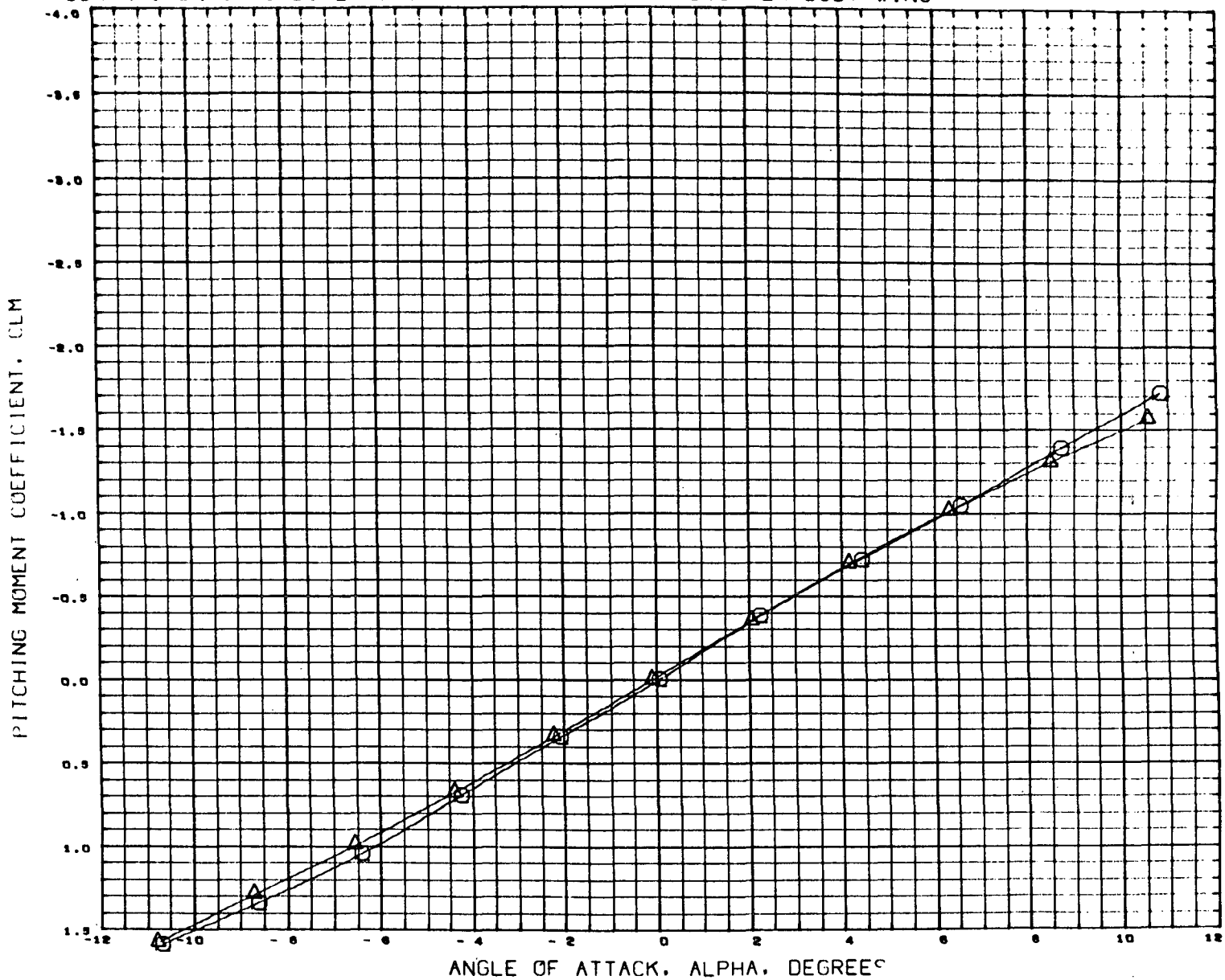


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | | |
|--------|--------|-------|--------|-----------------------|---------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 | SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 | INCHES |
| | | | | BREF | 0.0990 | INCHES |
| | | | | XMRF | 0.0000 | |
| | | | | YMRF | 0.0000 | |
| | | | | ZMRF | 0.0000 | |
| | | | | SCALE | 0.0035 | SCALE |

MACH 0.899

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



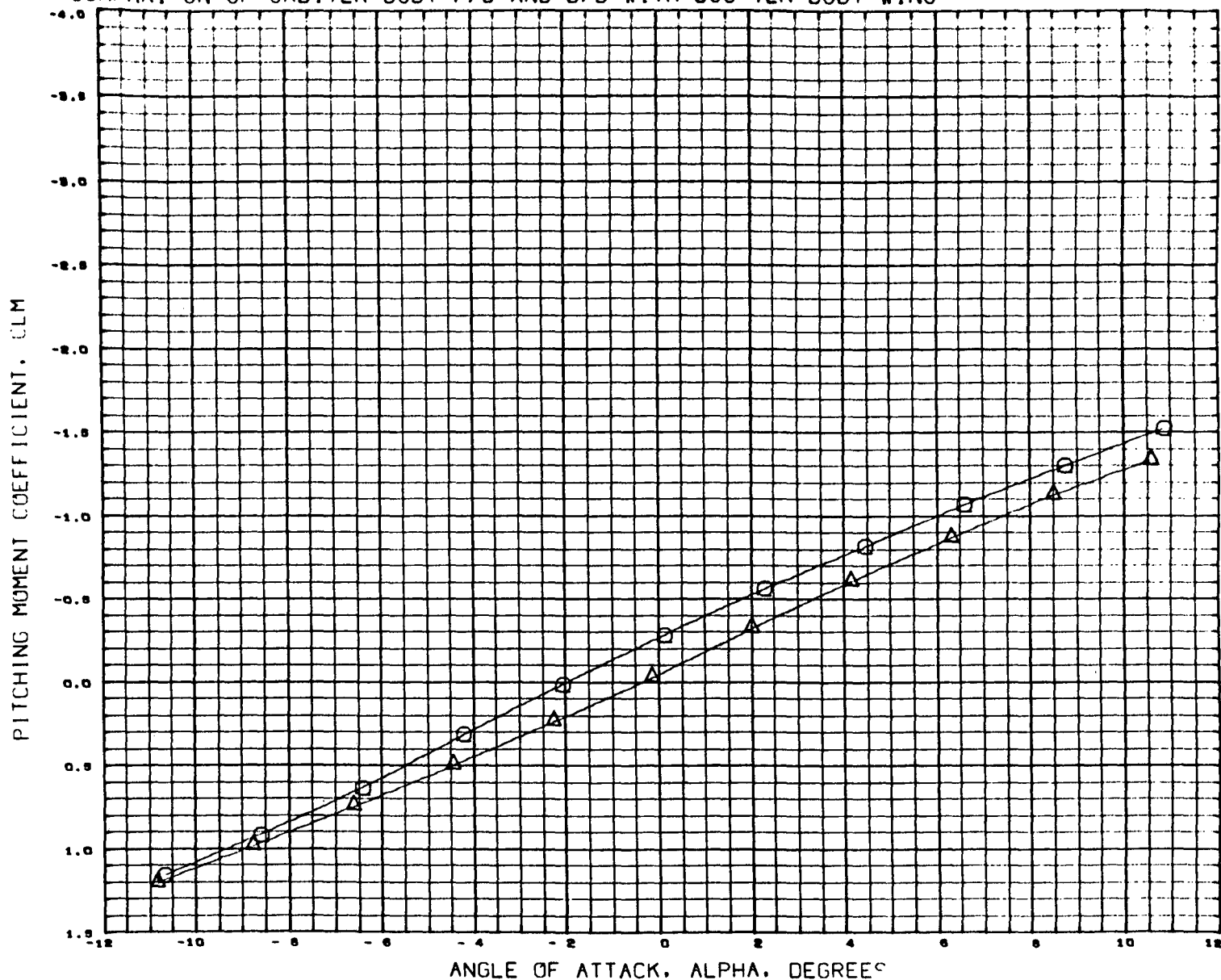
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B5

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.095

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

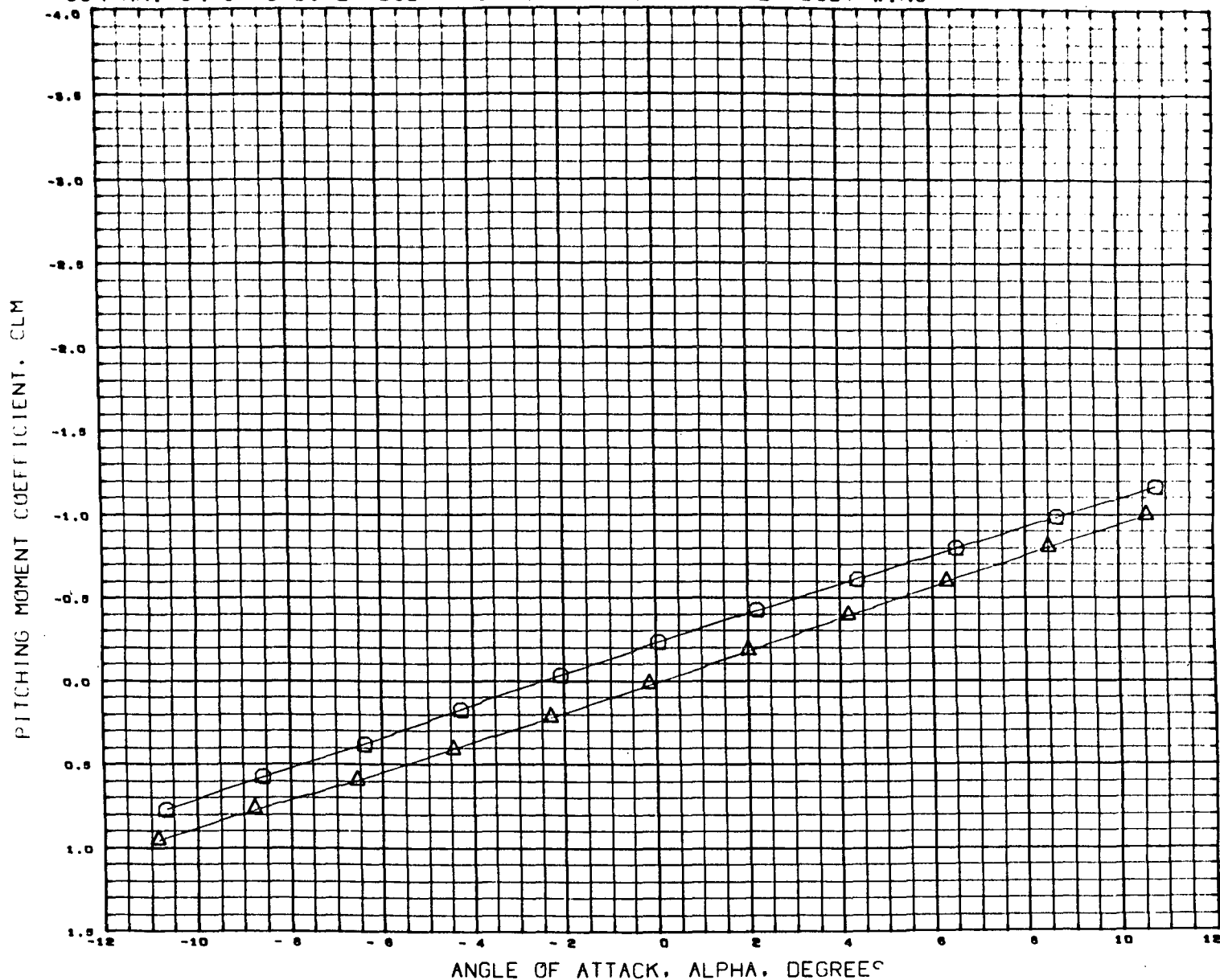


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) M5FC490 NR/GD LAUNCH B20W14+B5
 (H3249A) M5FC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 30 IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0039 SCALE |

MACH 1.468

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH 820W14+B5
 (H3249A) MSFC490 NR/GD LAUNCH 820W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.959

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



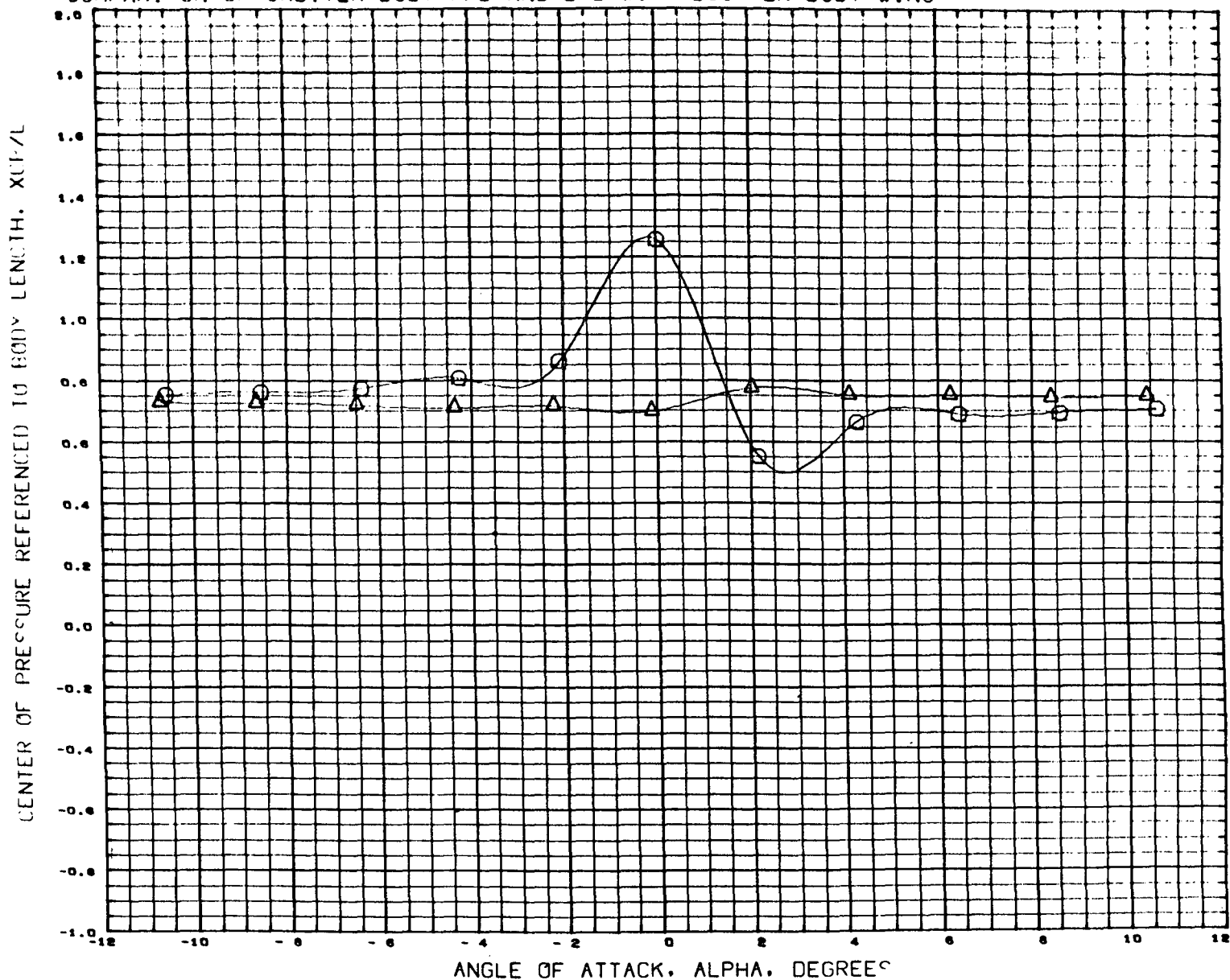
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH 820W14+B3
 (H3249A) MSFC490 NR/GD LAUNCH 820W14+B3

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 19.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0039 SCALE

MACH 0.601

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



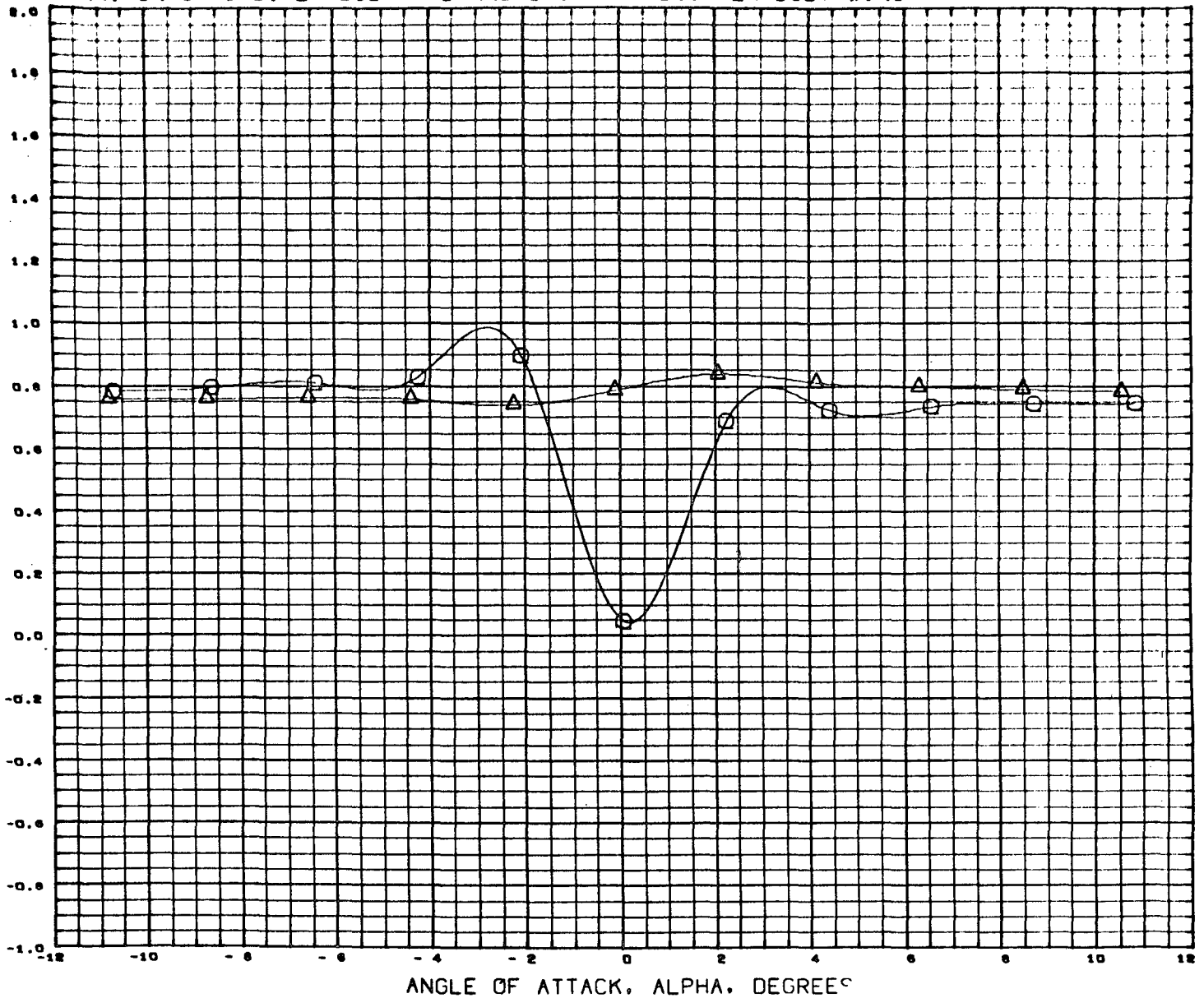
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.899

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B3
 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B3

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0930 INCHES |
| | | | | BREF | 0.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.095

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

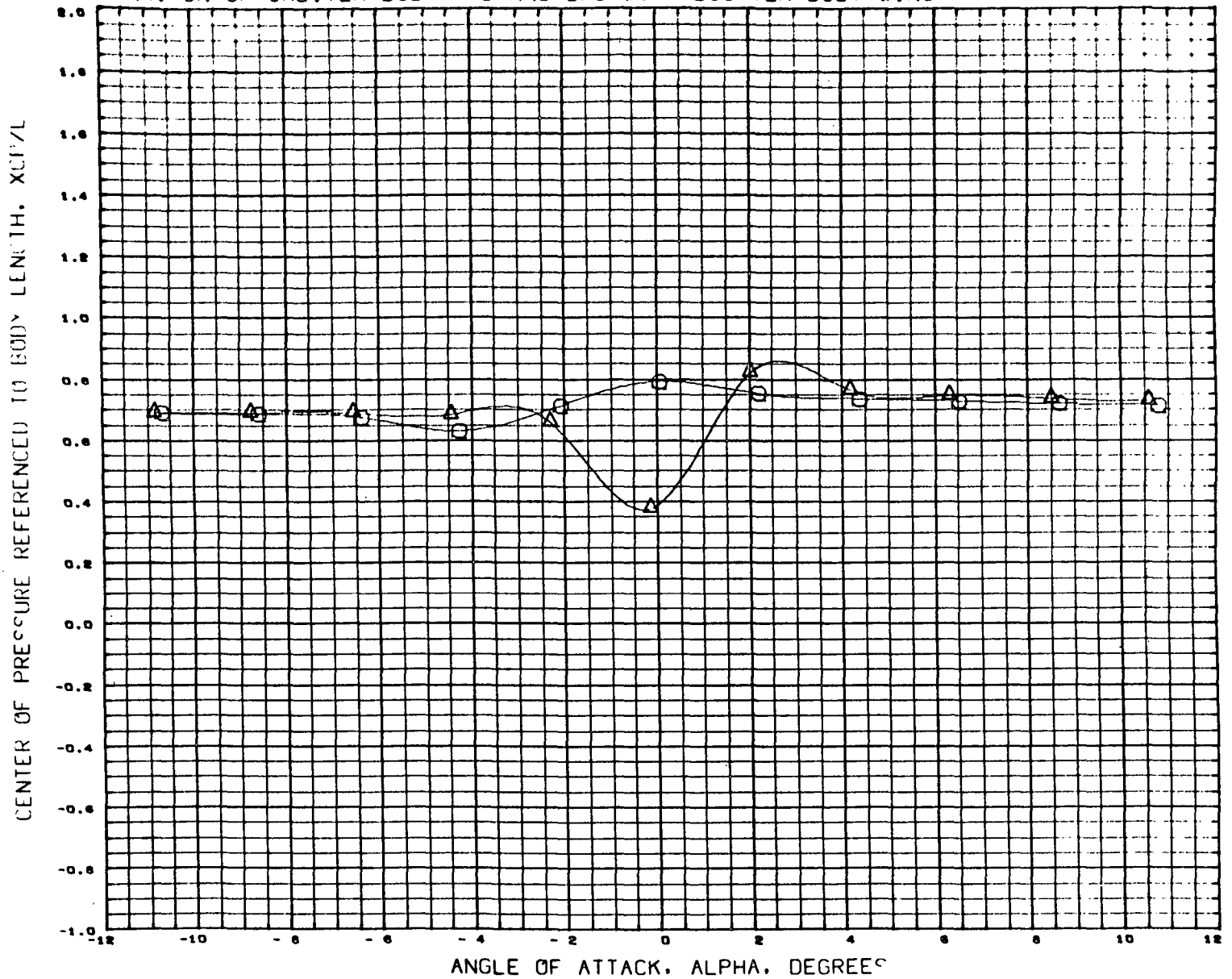


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B3
 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B3

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6360 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.468

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (H3209A) ○ | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (H3243A) Δ | MSFC490 NR/GD LAUNCH B20W14+B5 |

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0039 SCALE |

MACH 1.959

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



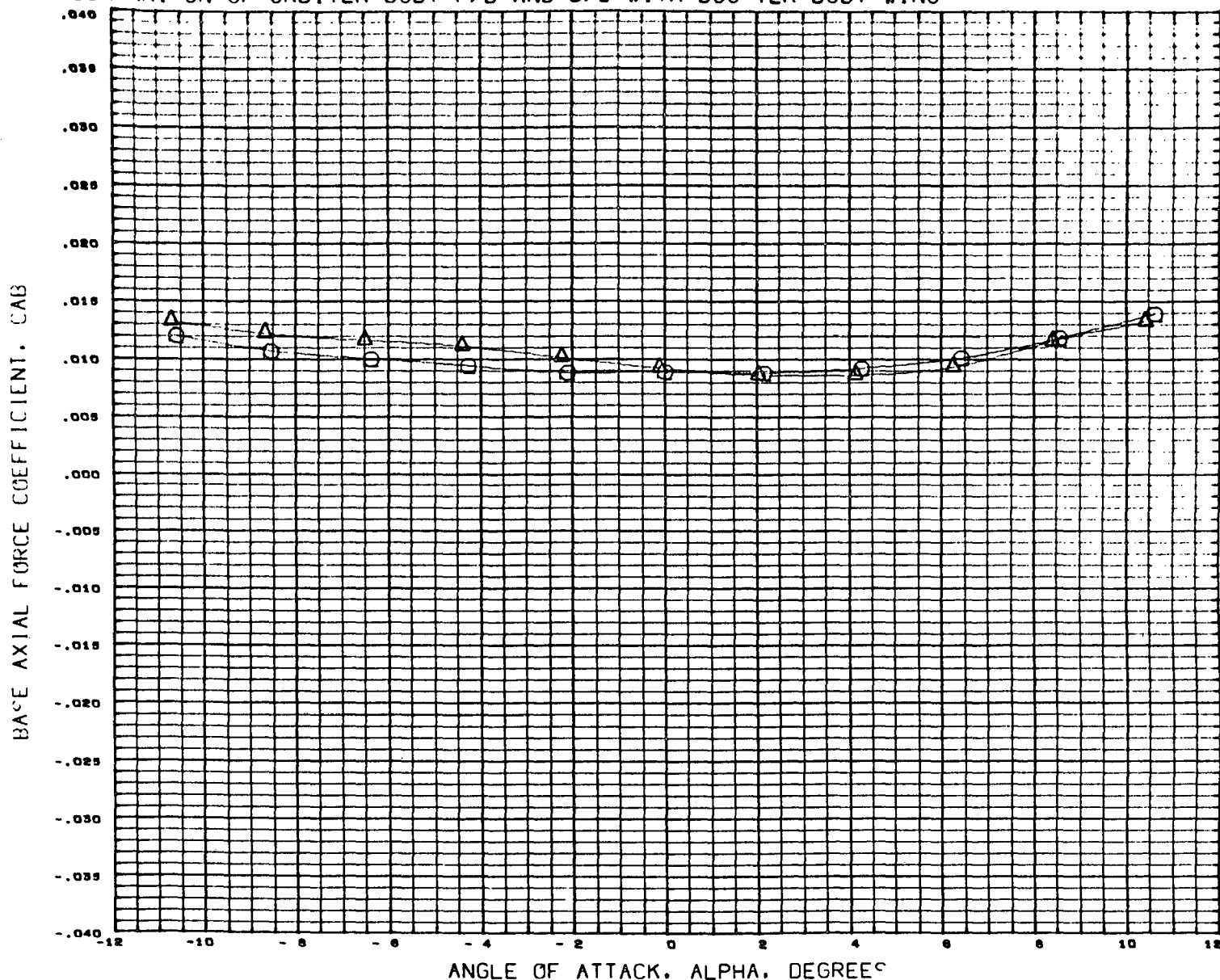
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B3
 (H3243A) MSFC490 NR/GD LAUNCH B20W14+B3

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 30 IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.601

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING





DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH 820W14+B3
 (H3243A) MSFC490 NR/GD LAUNCH 820W14+B3

| ORBITN | POSITN | BETA | ELVATR | REFERENCE INFORMATION | | |
|--------|--------|-------|--------|-----------------------|---------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 | 50 IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 | INCHES |
| | | | | BREF | 6.0990 | INCHES |
| | | | | XMRP | 0.0000 | |
| | | | | YMRP | 0.0000 | |
| | | | | ZMRP | 0.0000 | |
| | | | | SCALE | 0.0035 | SCALE |

MACH 0.899

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A)  MSFC490 NR/GD LAUNCH B20W14+B3
 (H3249A)  MSFC490 NR/GD LAUNCH B20W14+B3

| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 30 IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.099

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



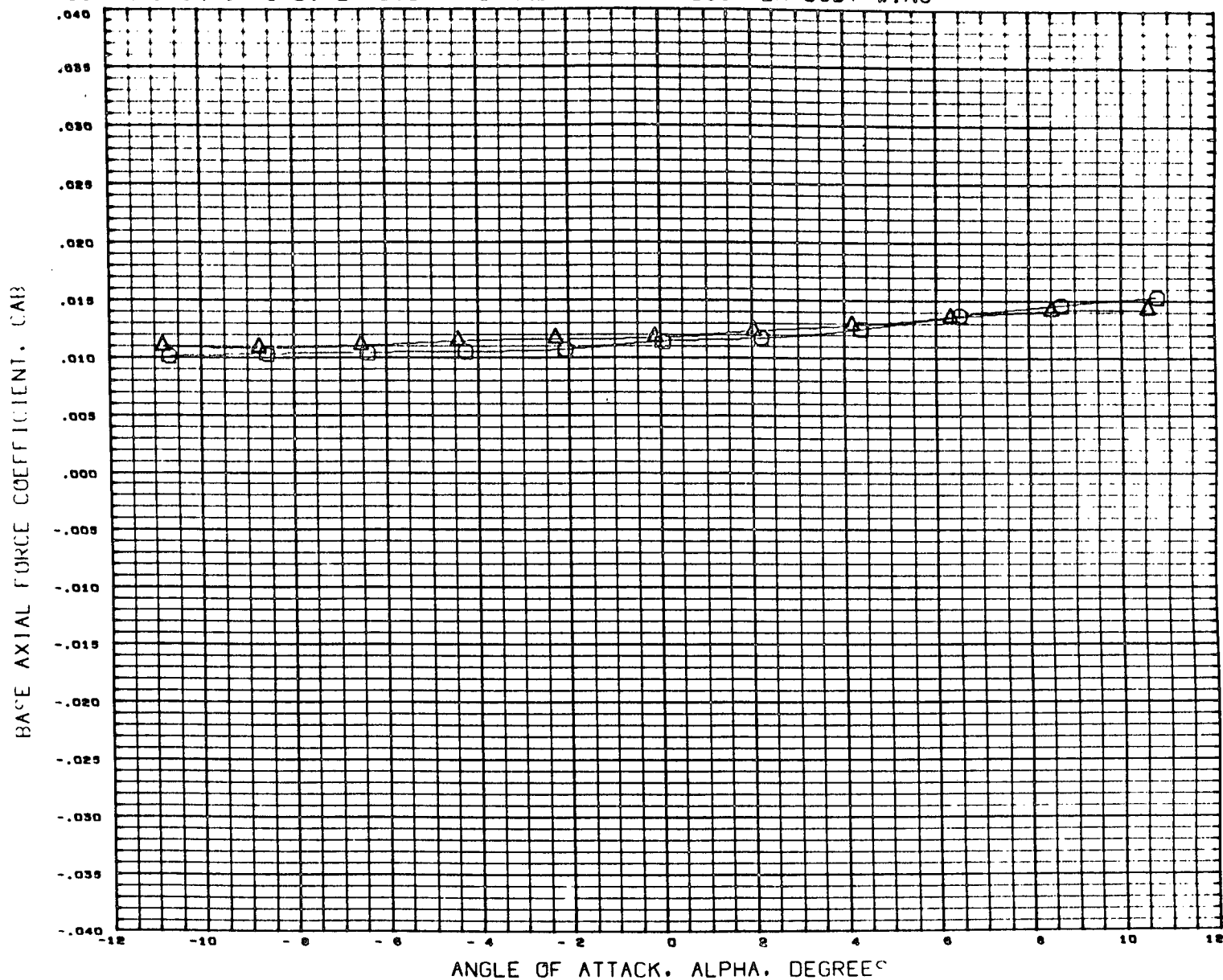
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) ○ MSFC490 NR/GD LAUNCH B20W14+B5
 (H3245A) Δ MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.466

A-

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (H3245A) MSFC490 NR/GD LAUNCH B20W14+B5

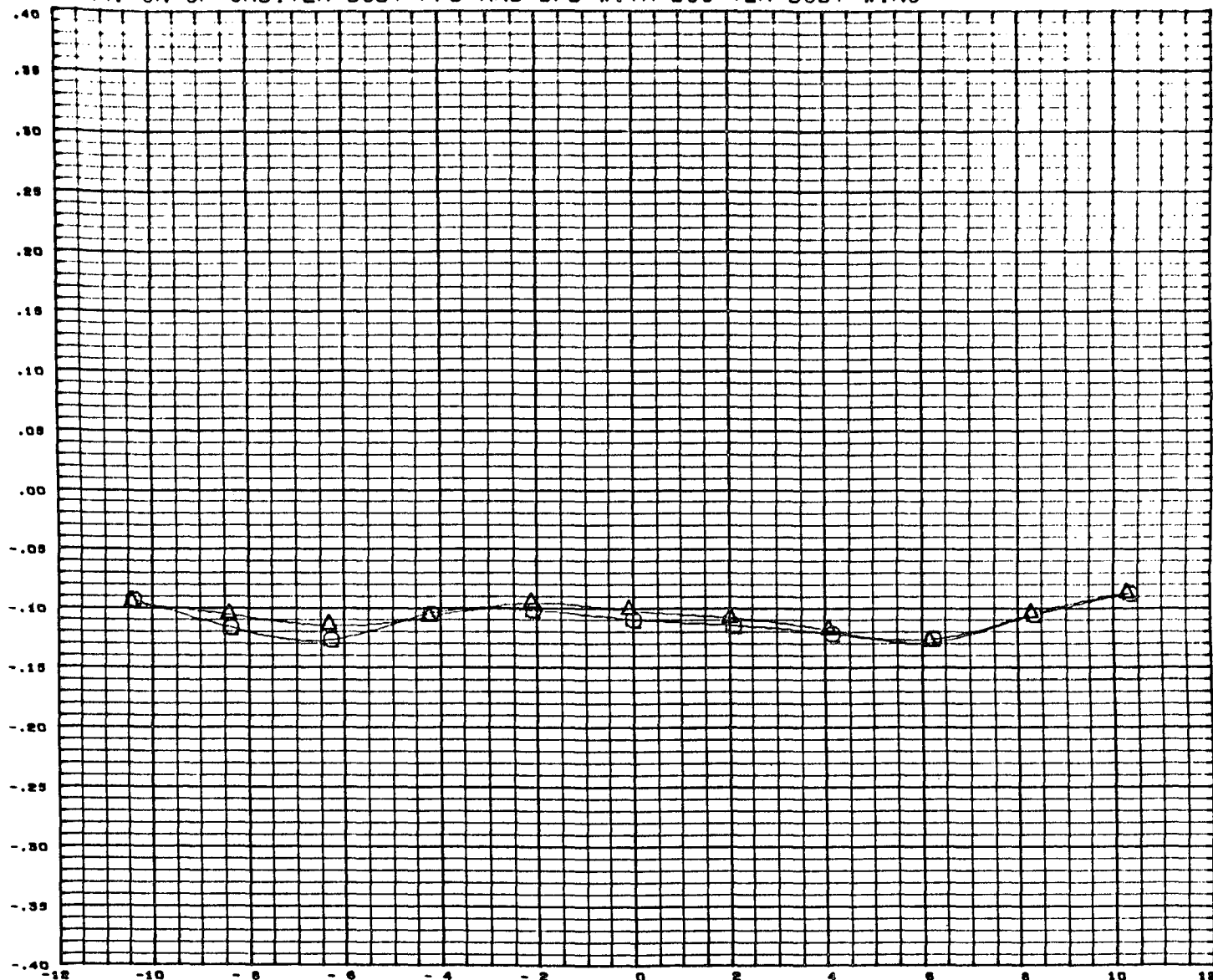
ORBINC POSITN BETA ELVATR
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 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 0.0950 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0039 SCALE

MACH 1.959

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE, CLMAY (PER DEGREE)

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



ANGLE OF ATTACK, ALPHA, DEGREE°

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13209A) MSFC490 NR/GD LAUNCH B20W14+B3
 (13245A) MSFC490 NR/GD LAUNCH B20W14+B3

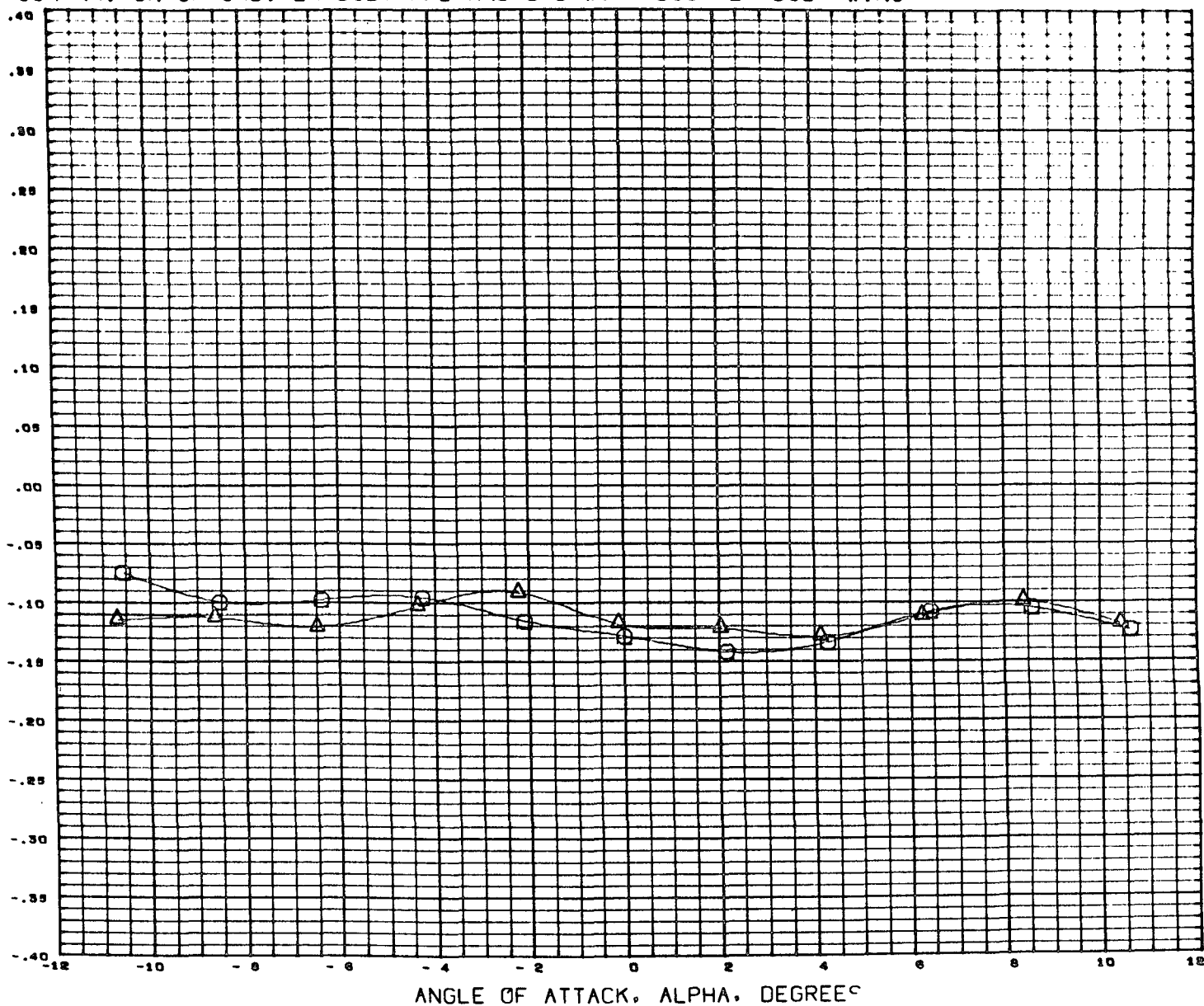
ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0039 SCALE

MACH 0.001

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13209A) MSFC490 NR/GD LAUNCH B20W14+85
 (13249A) MSFC490 NR/GD LAUNCH B20W14+85

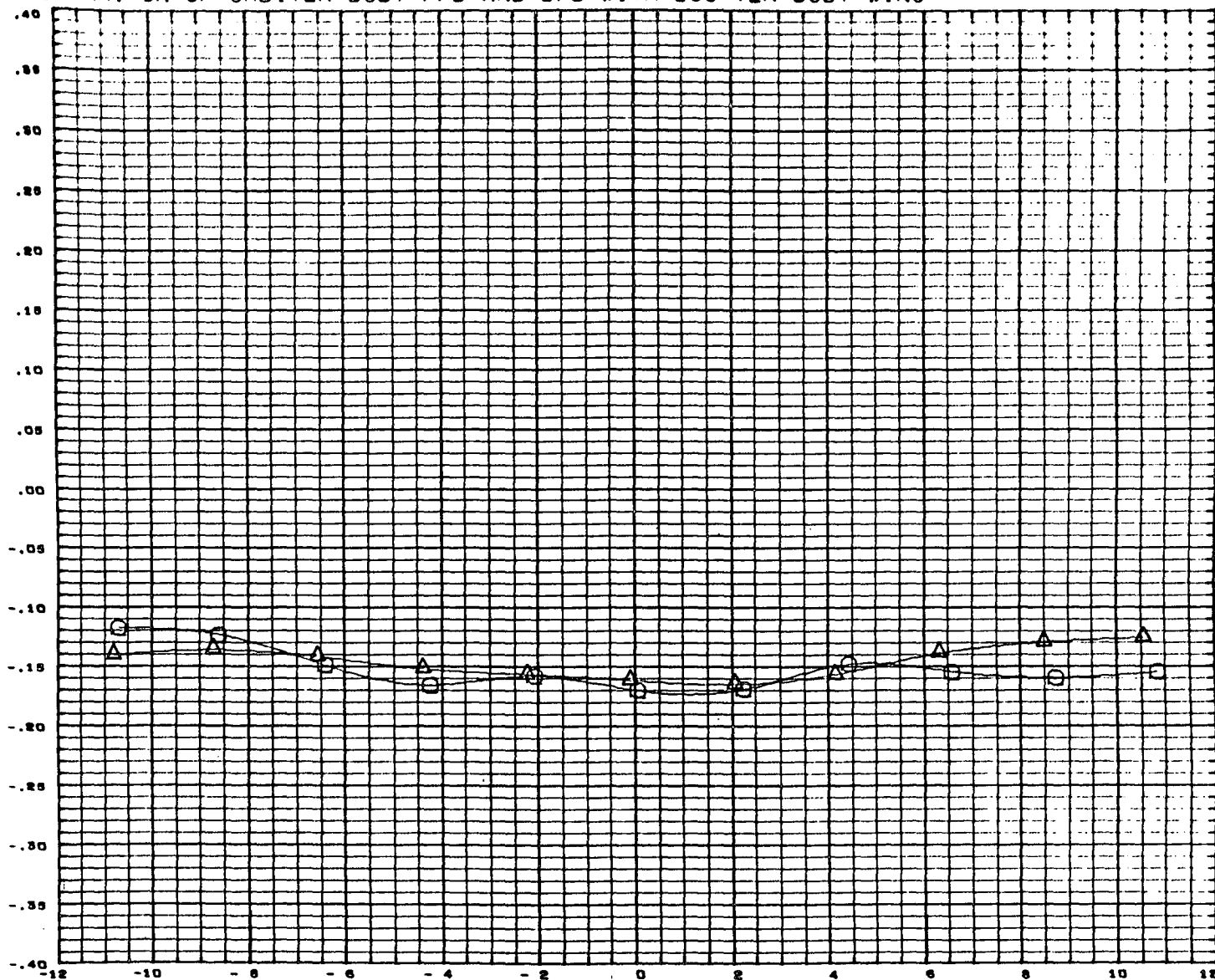
ORBINC POSITN BETA ELVATR
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 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.699

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM_{AP} (PER DEGREE)

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



ANGLE OF ATTACK, ALPHA, DEGREE

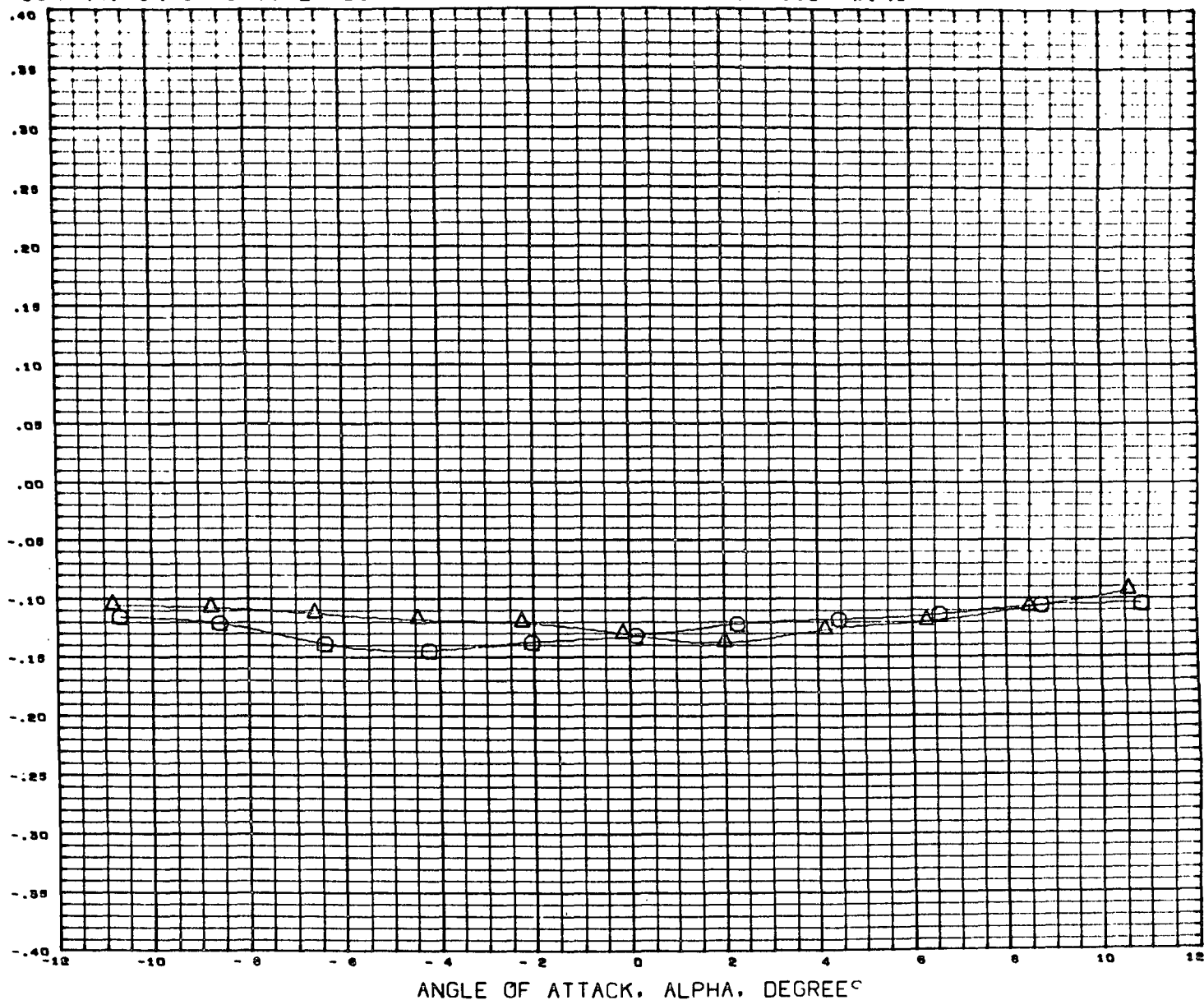
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13209A) ○ MSFC490 NR/GD LAUNCH B20W14+B5
 (13245A) Δ MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.095

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAD (PER DEGREE)

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13209A) MSFC490 NR/GD LAUNCH B20W14+B3
 (13243A) MSFC490 NR/GD LAUNCH B20W14+B3

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.460

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

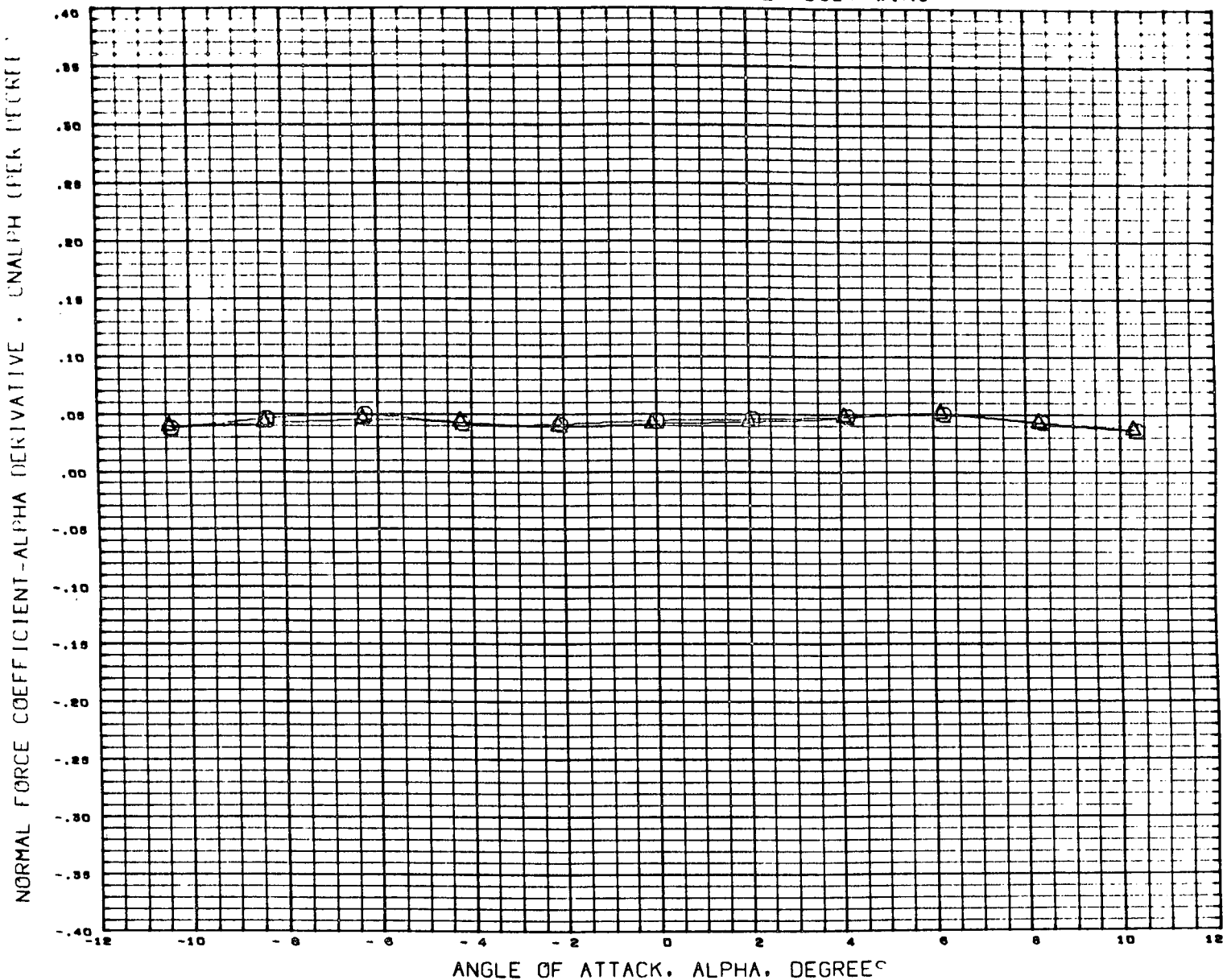


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13209A) | MSFC490 NR/GD LAUNCH B20W14+B5 |
| (13243A) | MSFC490 NR/GD LAUNCH B20W14+B5 |

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.959

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13209A) MSFC490 NR/GD LAUNCH B20W14+B3
 (13245A) MSFC490 NR/GD LAUNCH B20W14+B5

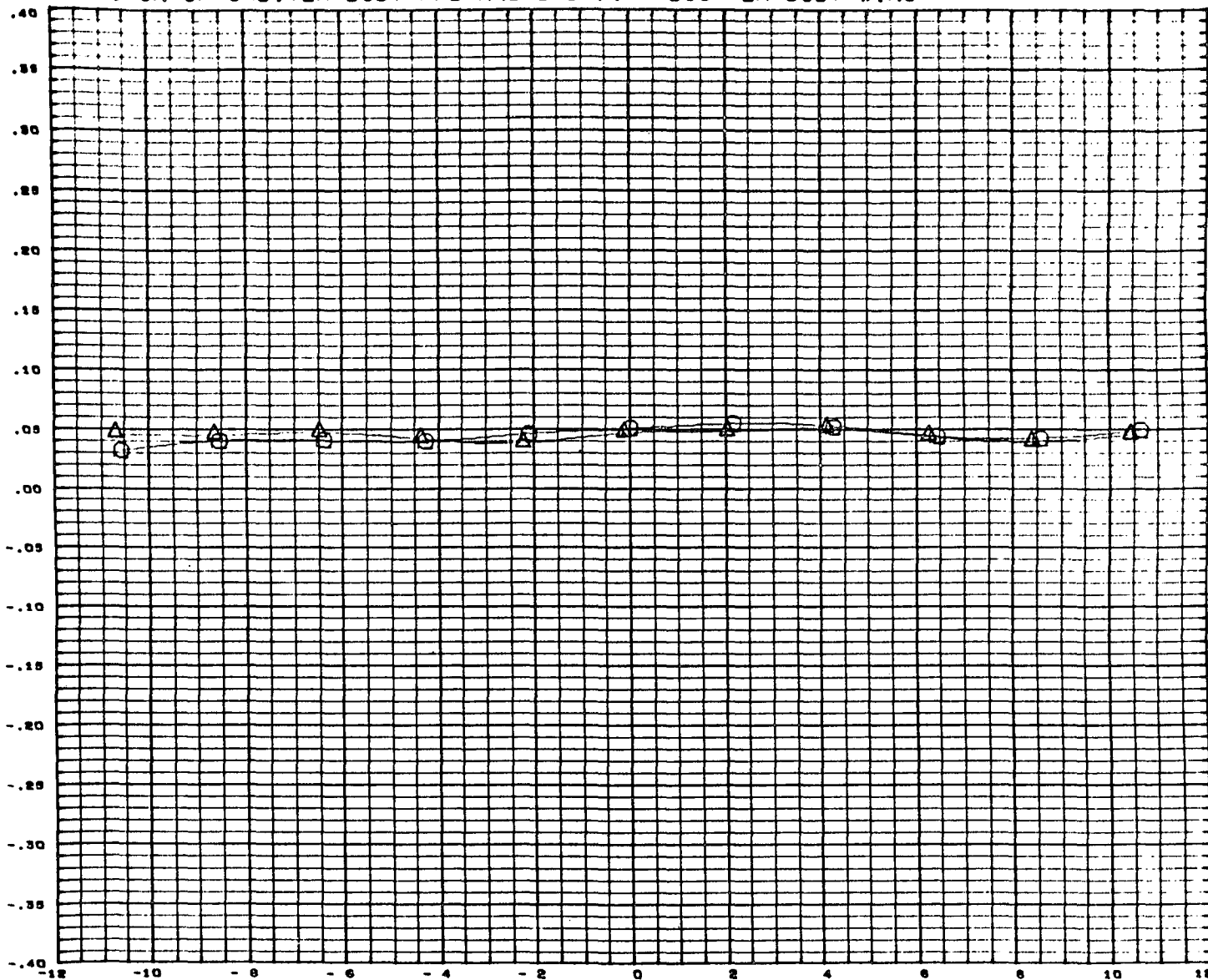
ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.001

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (13245A) MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 0.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.899

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



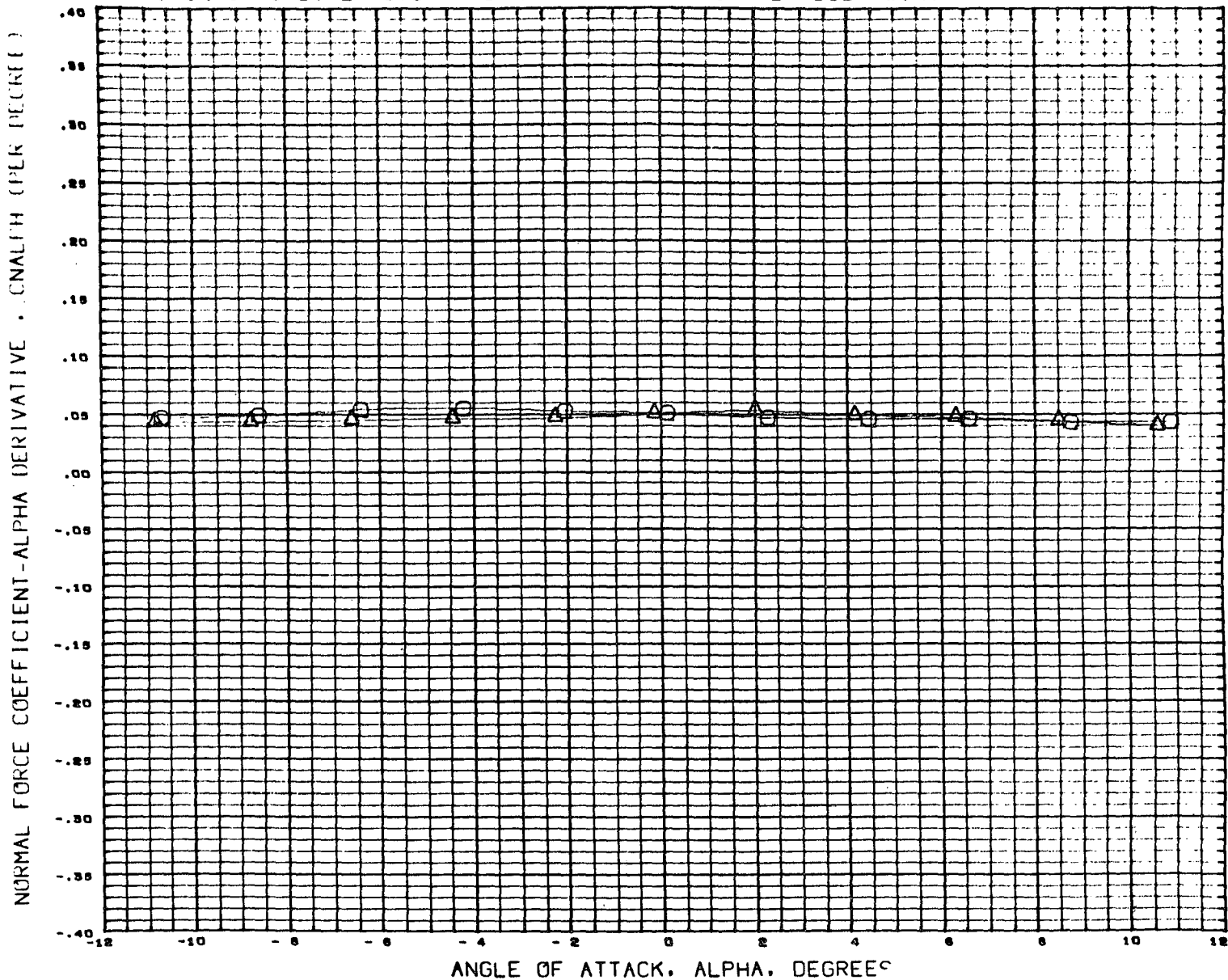
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13209A) | MSFC490 NR/GD LAUNCH 820W14+85 |
| (13245A) | MSFC490 NR/GD LAUNCH 820W14+85 |



| ORBIT | POSITN | BETA | ELVATR |
|-------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 19.6960 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.099

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13209A)  MSFC490 NR/GD LAUNCH B20W14+B5
 (13249A)  MSFC490 NR/GD LAUNCH B20W14+B5

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 0.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.468

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13209A) MSFC490 NR/GD LAUNCH 820W14+25
 (13245A) MSFC490 NR/GD LAUNCH 820W14+25

ORBINC POSITN BETA ELVATR
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 0.000 4.000 0.000 0.000

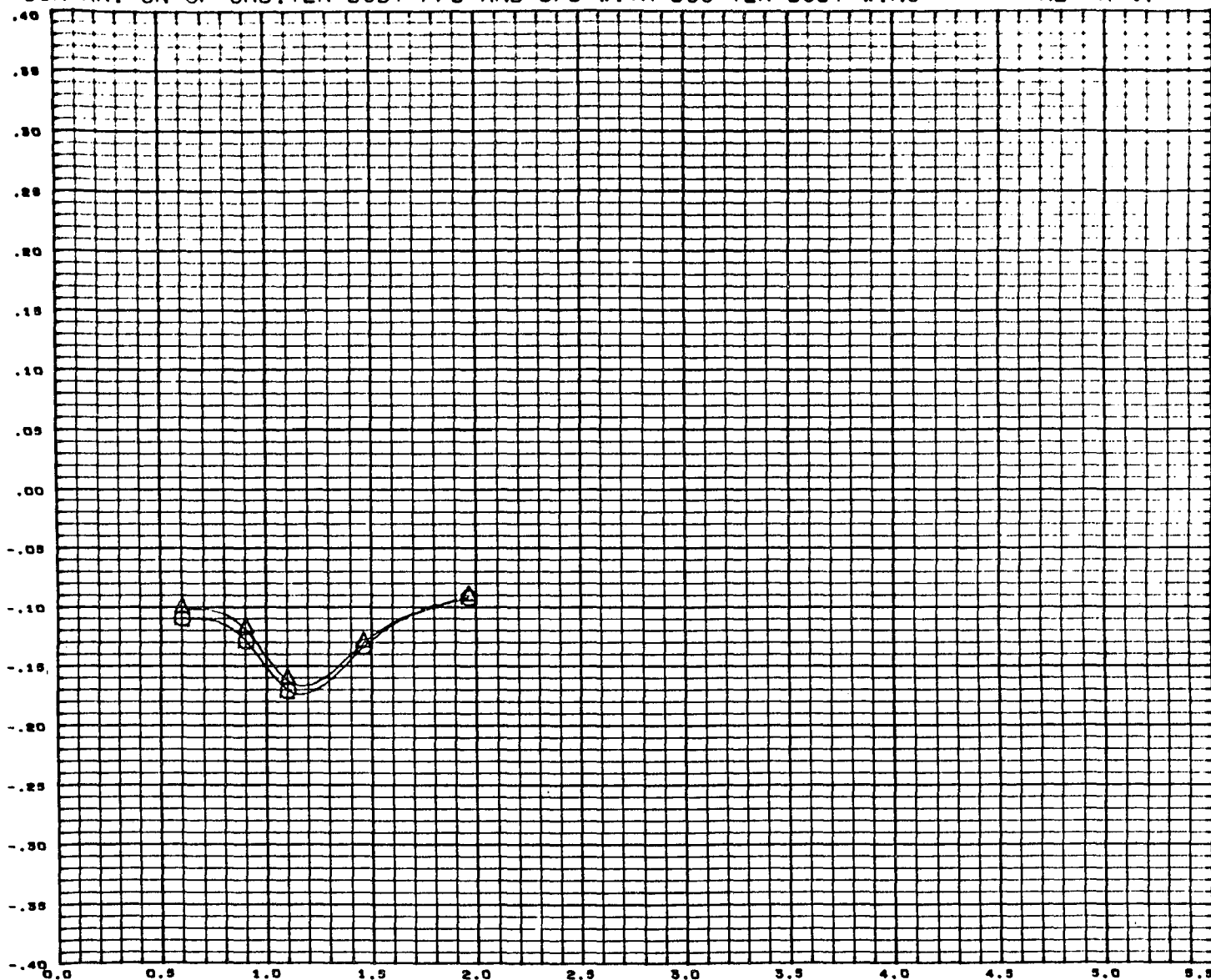
REFERENCE INFORMATION
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 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.939

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CUMULATED PER DEGREE

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

ALPHA=0.



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (J3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (J3245A) MSFC490 NR/GD LAUNCH B20W14+B5

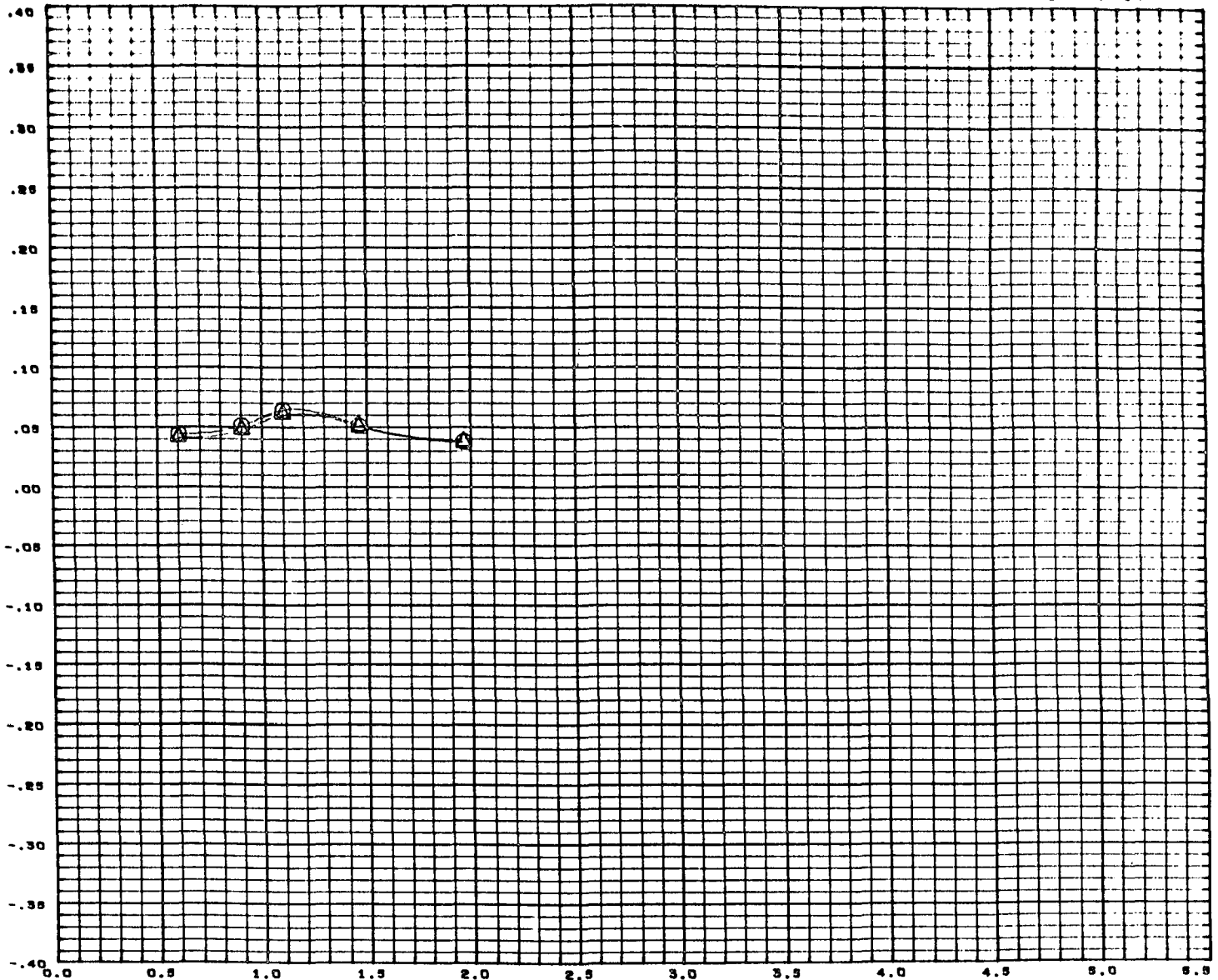
| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

ALPHA=0.

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - UNALIGNED DERIVATIVE



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (J3209A) M5FC490 NR/GD LAUNCH 820W14+85
 (J3245A) M5FC490 NR/GD LAUNCH 820W14+85

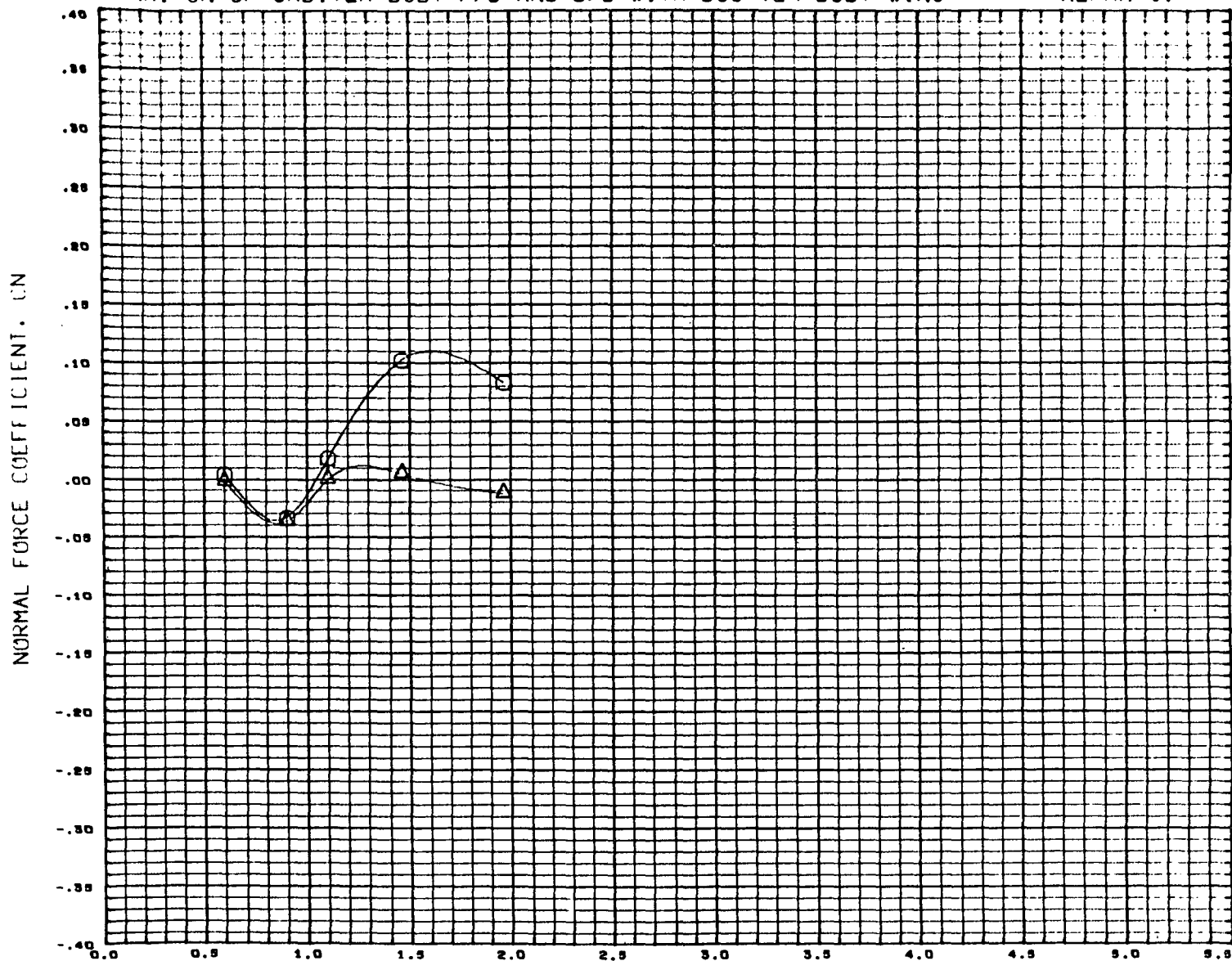
| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 13.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0033 | SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

ALPHA=0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (K3245A) MSFC490 NR/GD LAUNCH B20W14+B5

MACH NUMBER

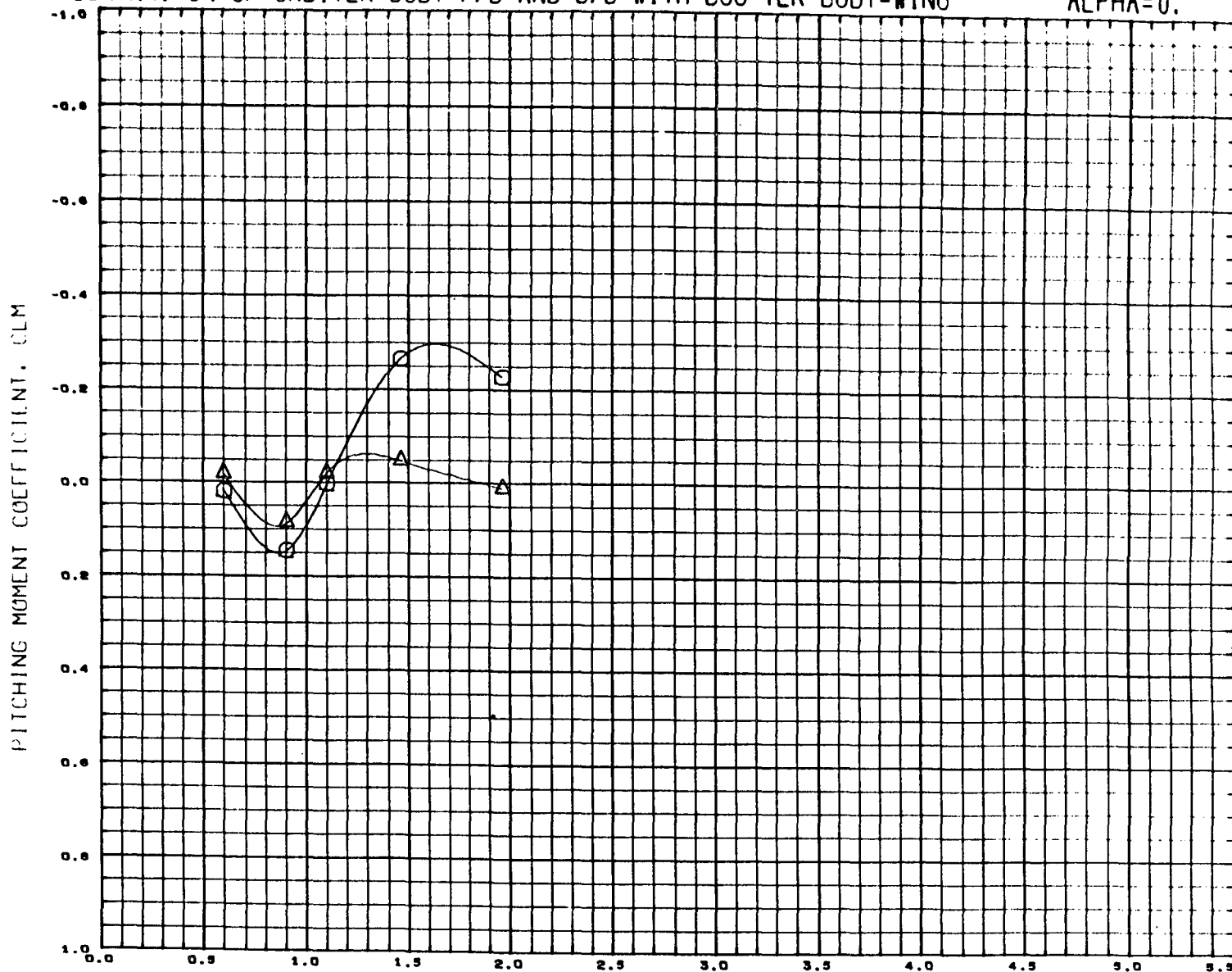
| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | 30 IN |
| LREF | 3.0990 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

ALPHA=0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (K3245A) MSFC490 NR/GD LAUNCH B20W14+B5

MACH NUMBER

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-WING

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, C_{AF}



MACH NUMBER

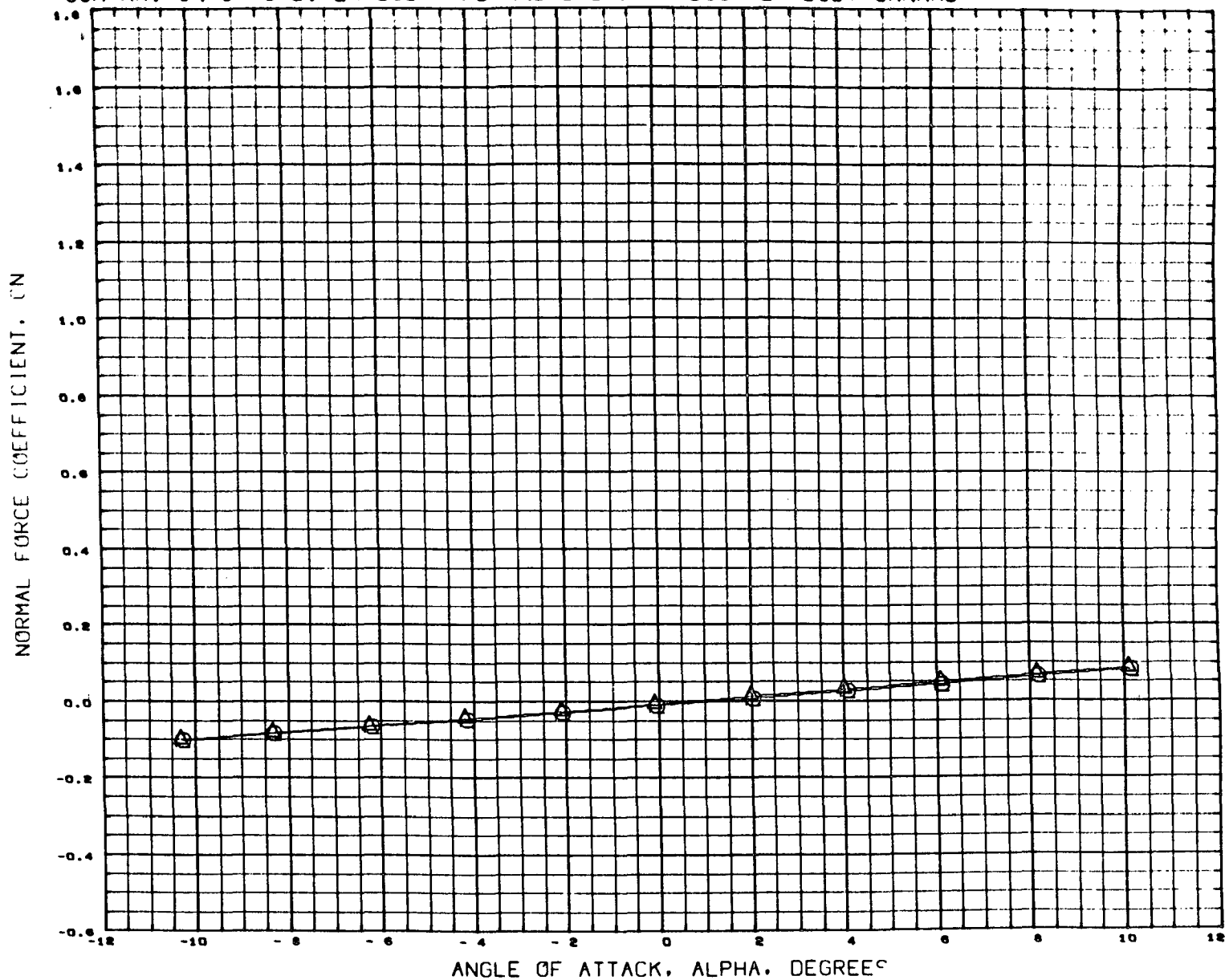
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3209A) MSFC490 NR/GD LAUNCH B20W14+B5
 (K3243A) MSFC490 NR/GD LAUNCH B20W14+B5

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0930 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

ALPHA 0.000

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



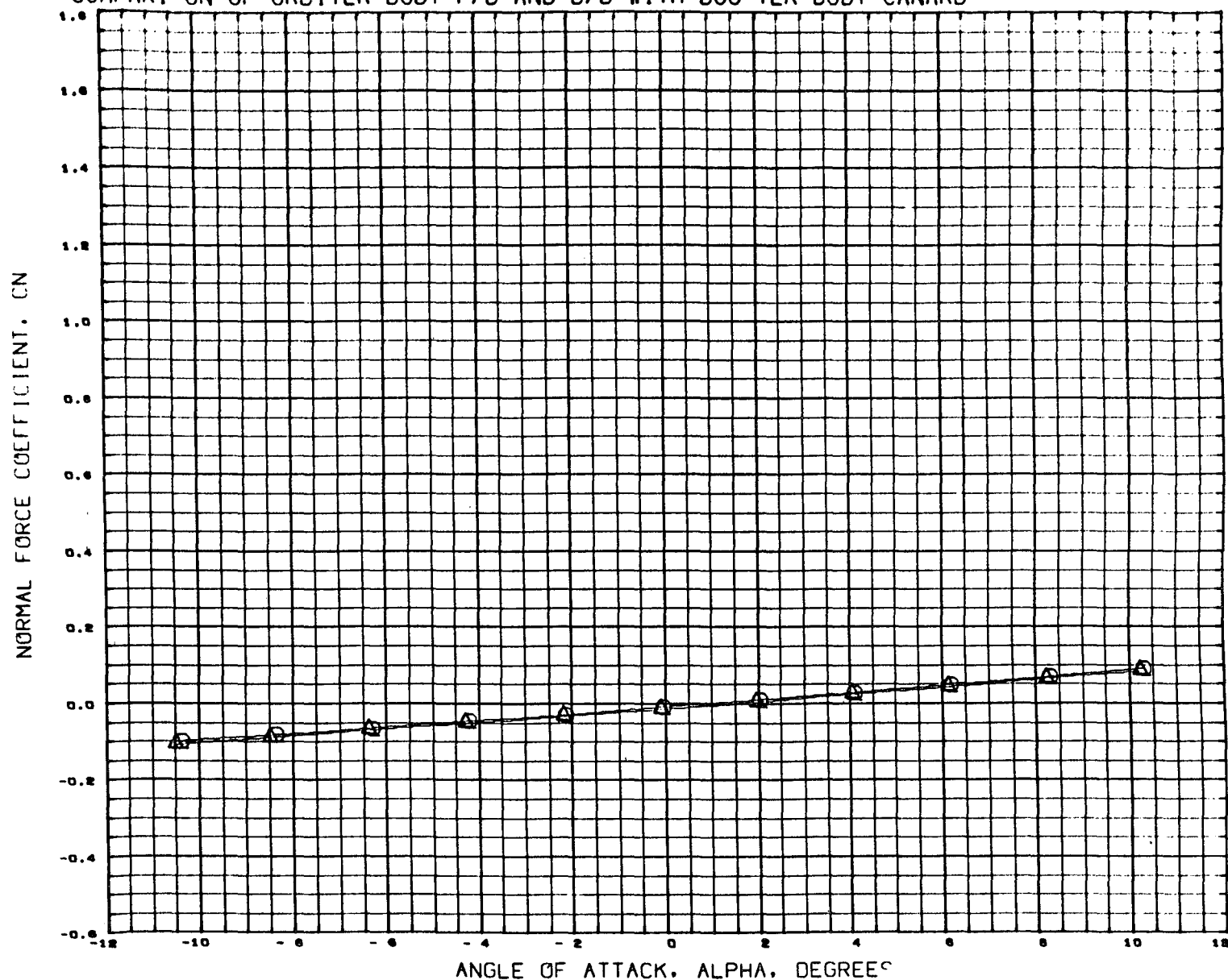
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | 50 IN |
| LREF | 3.0950 | INCHES |
| BREF | 0.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.999

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

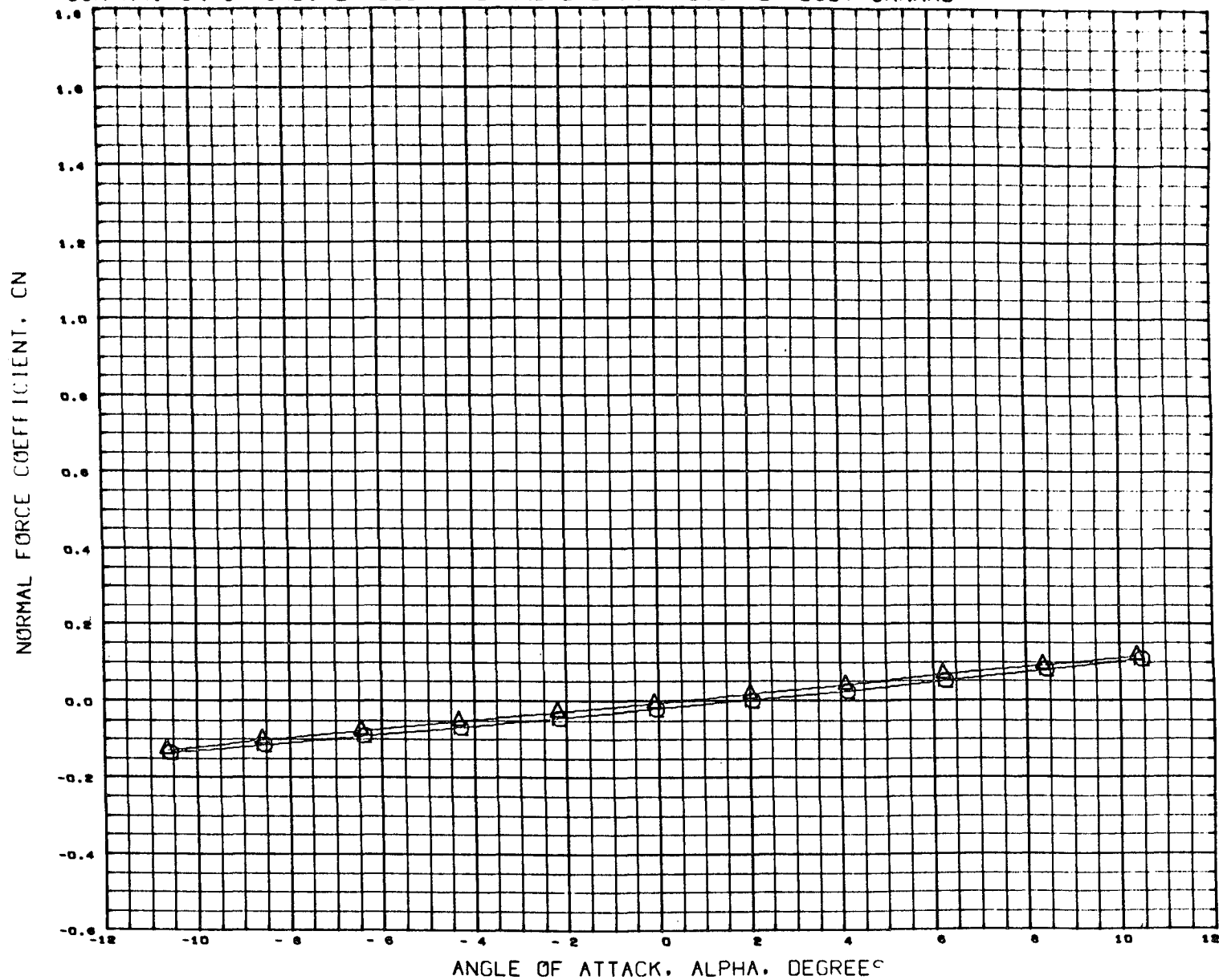


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3240A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 13.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.895

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

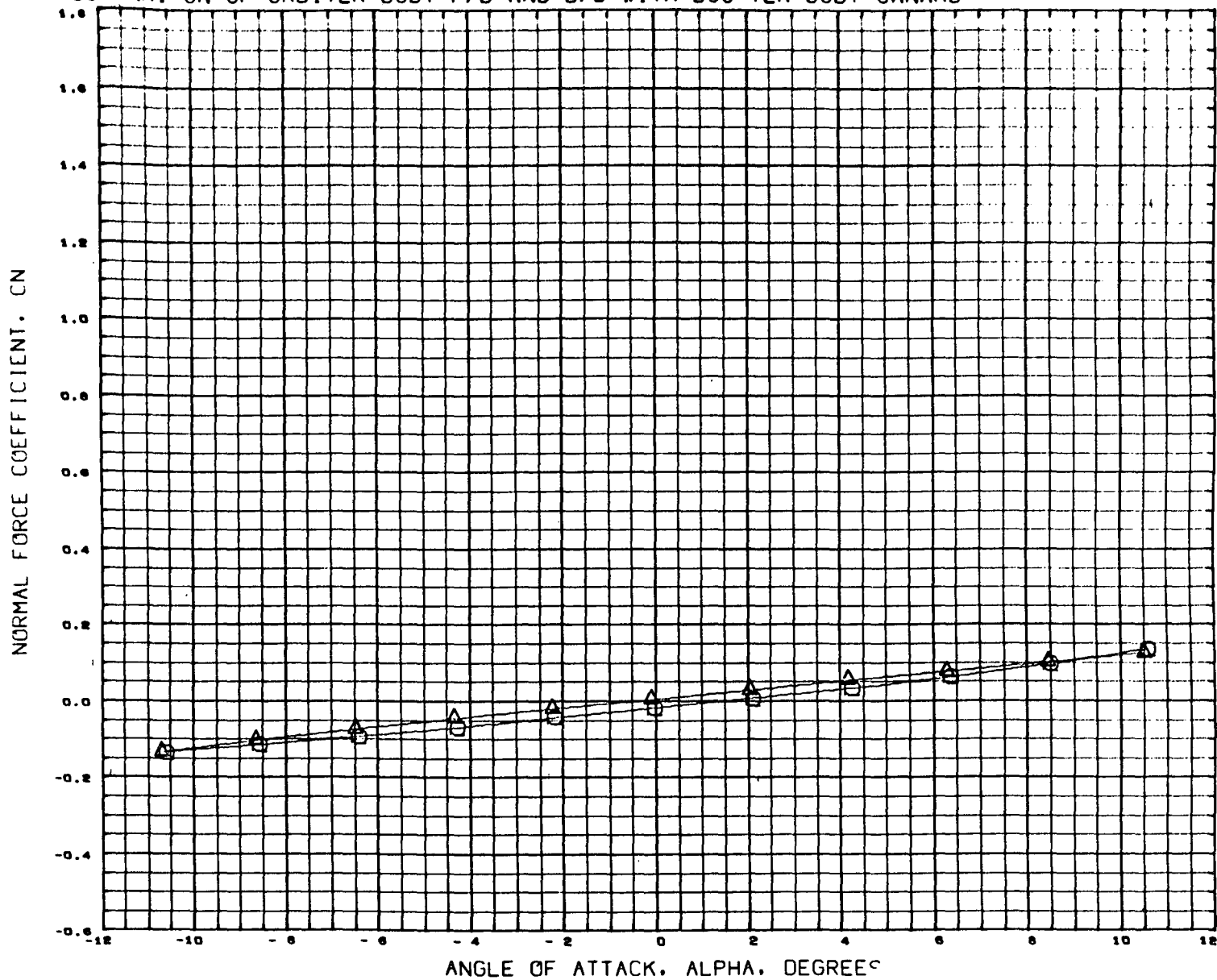


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0033 SCALE |

MACH 1.097

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

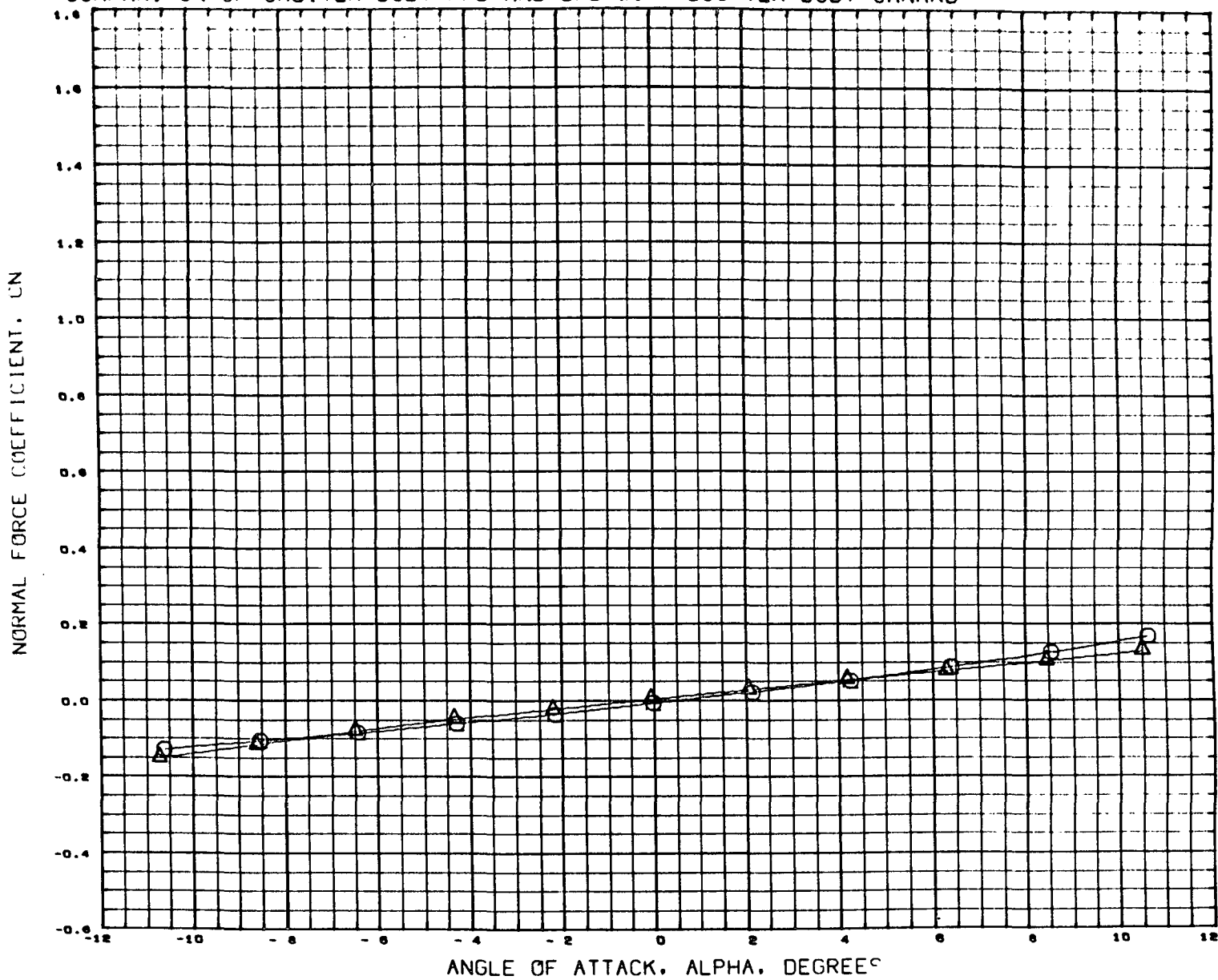


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+BS
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+BS

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRF | 0.0000 |
| | | | | YMRF | 0.0000 |
| | | | | ZMRF | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.466

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



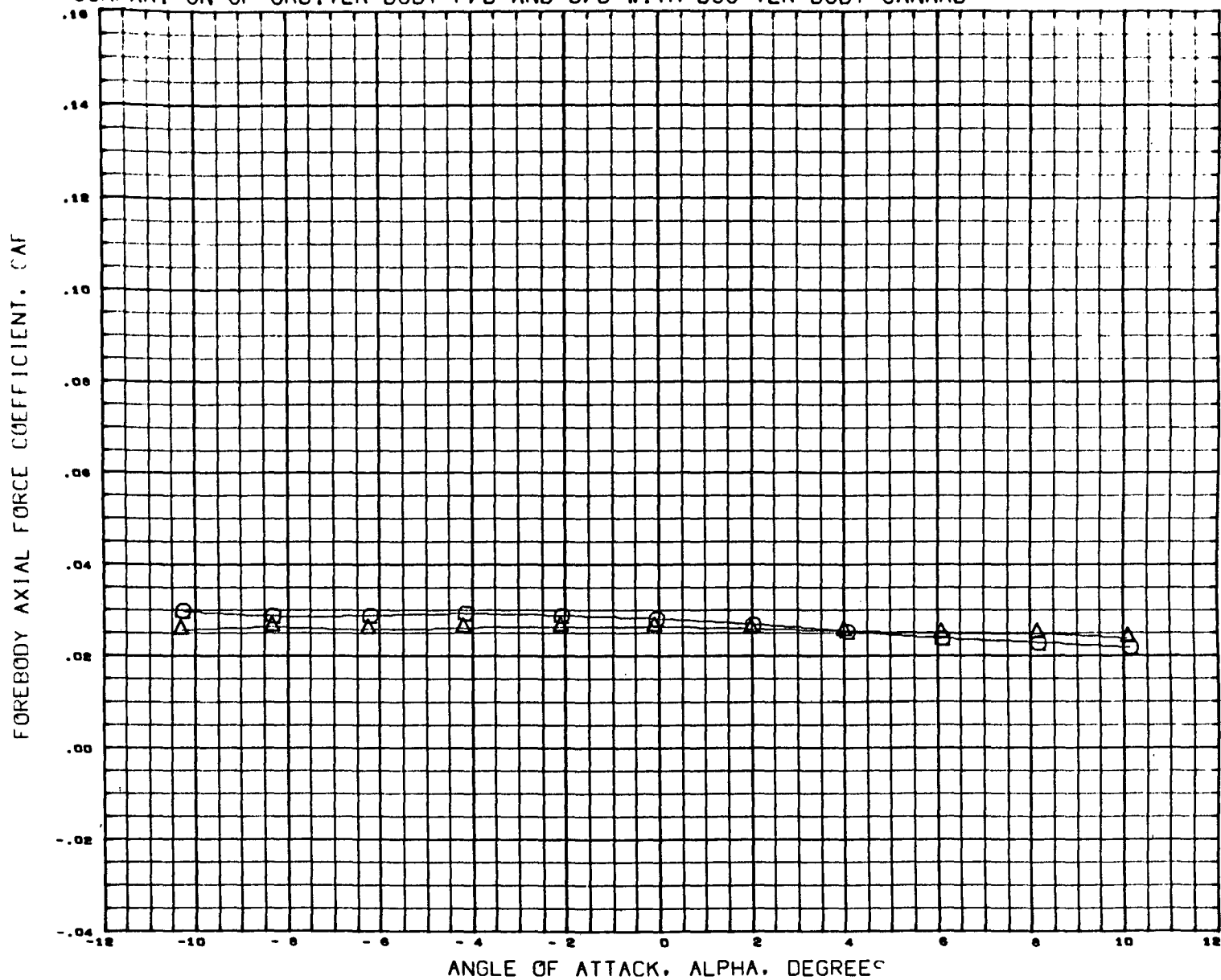
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B3
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B3

BETA CANARD ORBINC POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 4.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.955

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

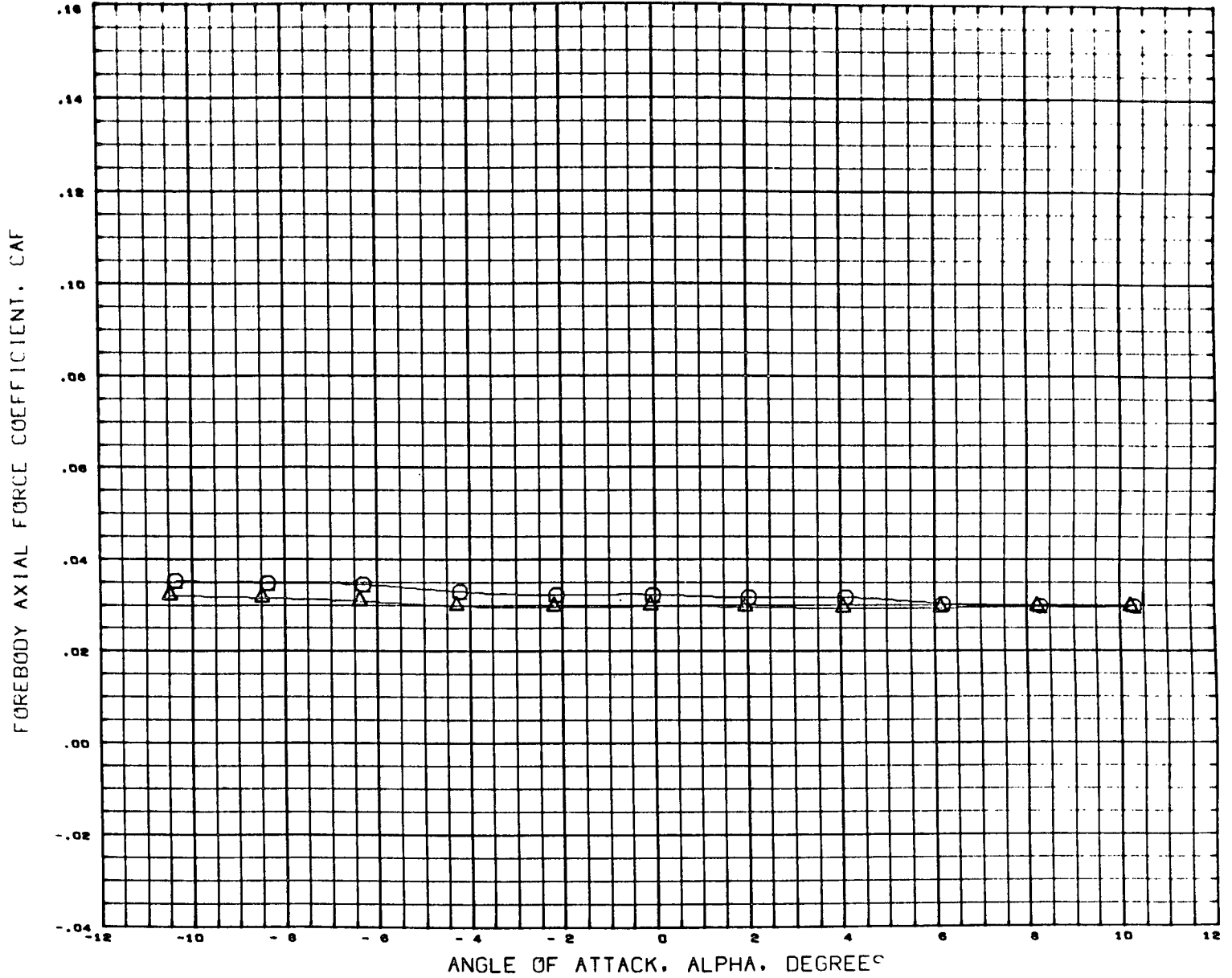


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.599

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.8580 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0950 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.895

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

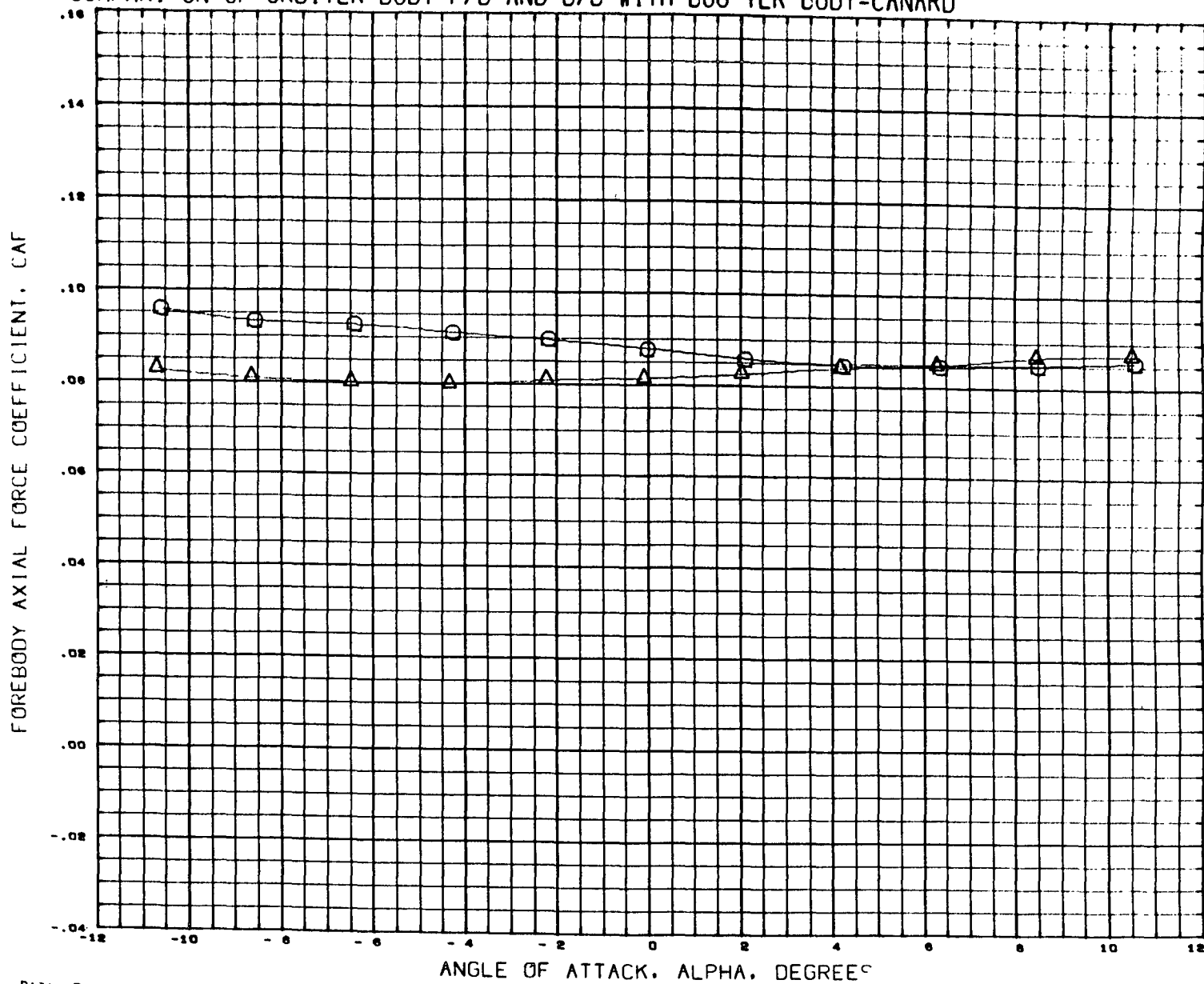


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+BS

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.097

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

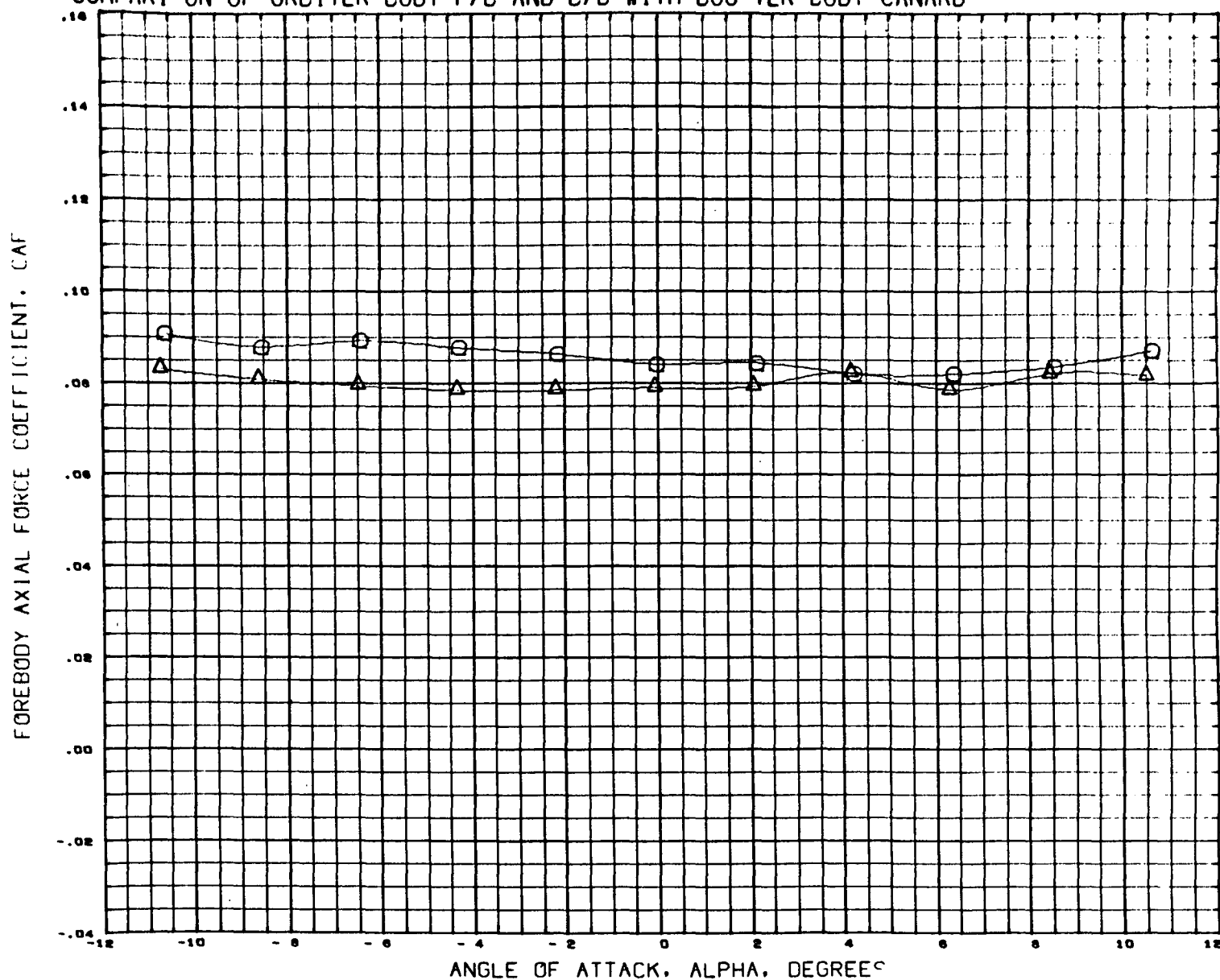


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.466

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



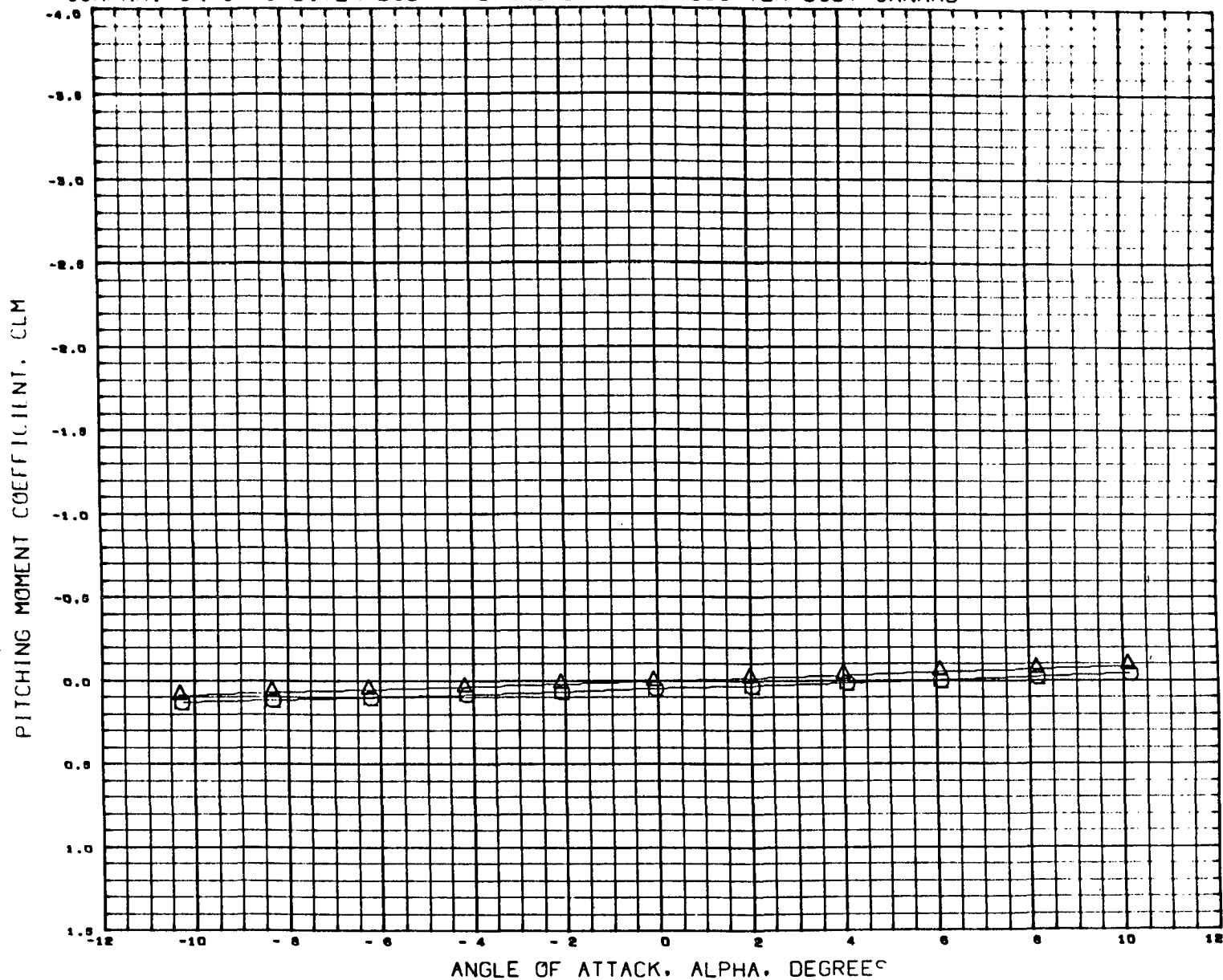
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+BS
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+BS

BETA CANARD ORBINC POSITN
 0.000 0.000 0.000 1.000
 0.000 0.000 0.000 4.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.955

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



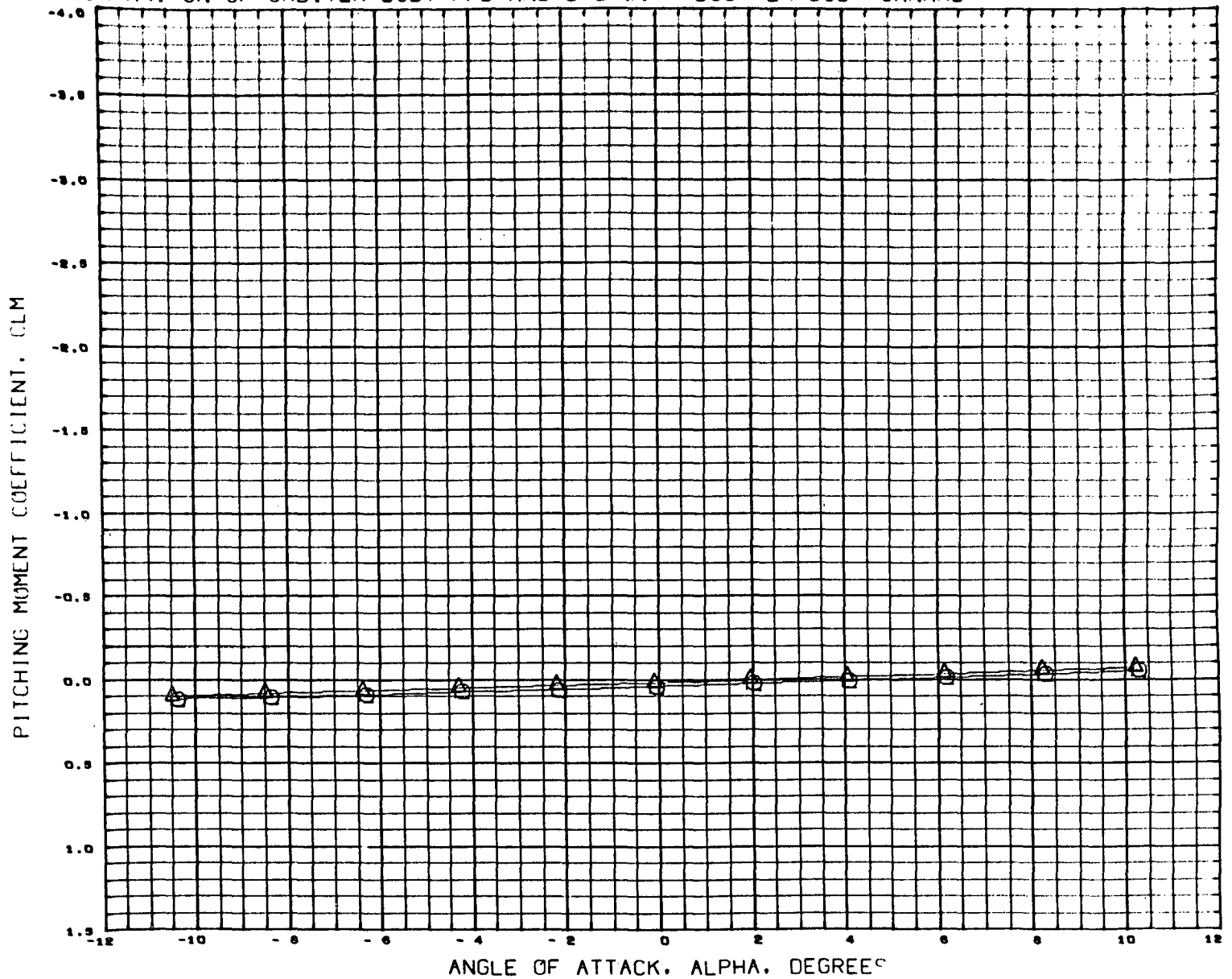
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBNIC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.599

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (H3212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

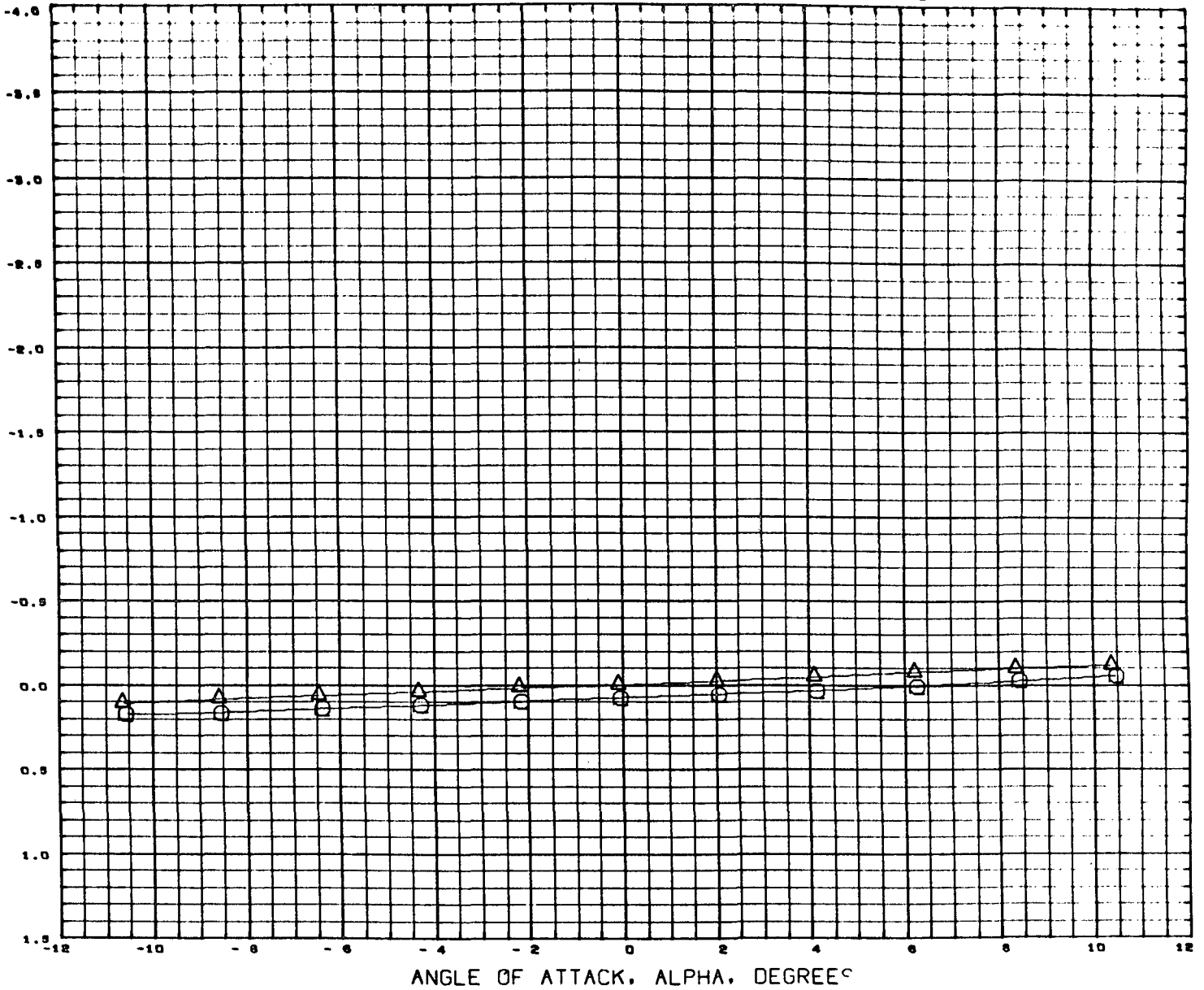
| BETA | CANARD | ORBINC | POSITN |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 1.000 |
| 0.000 | 0.000 | 0.000 | 4.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.895

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

PITCHING MOMENT COEFFICIENT, CLM



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (H3212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (H3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 0.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0033 SCALE |

MACH 1.097

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

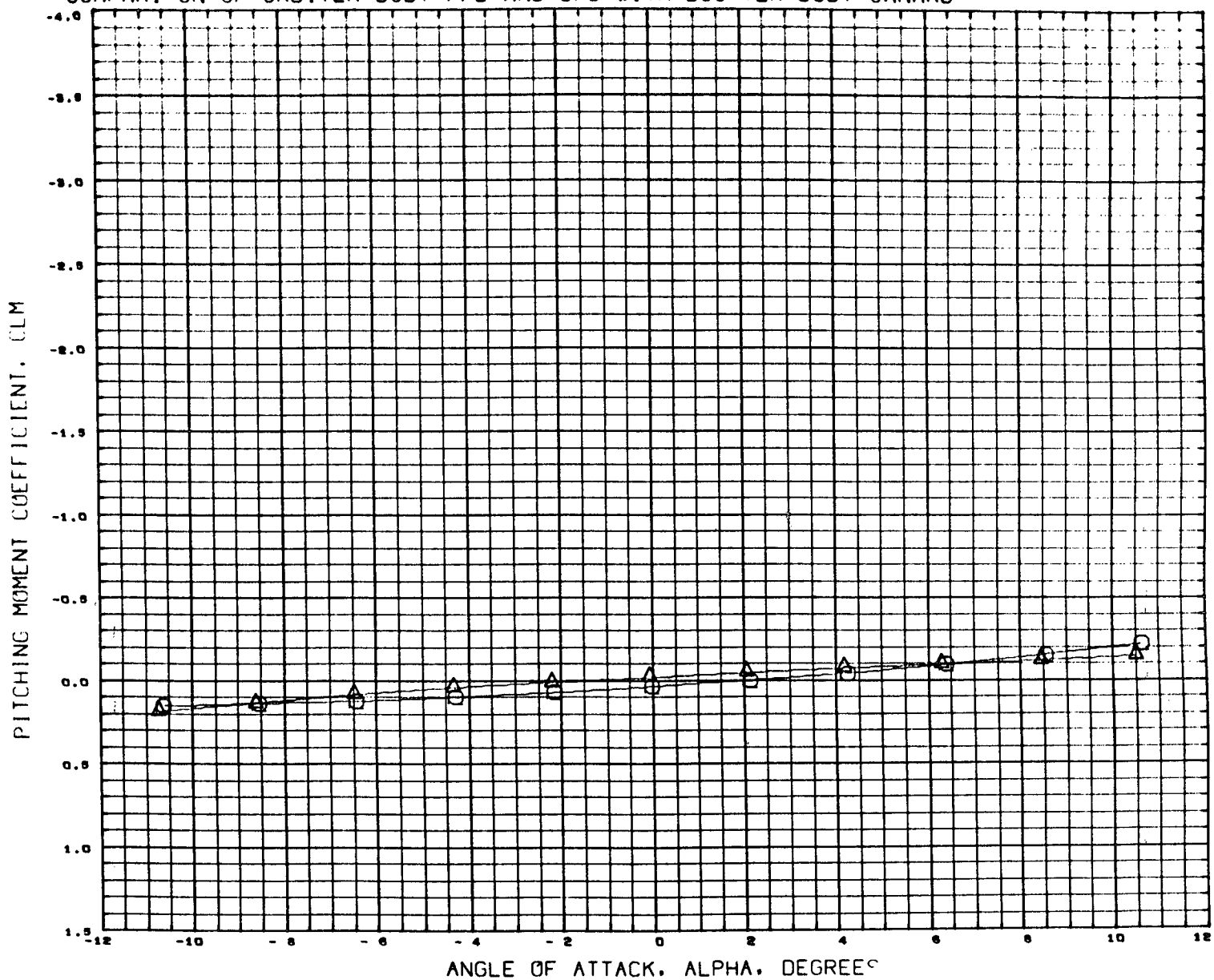


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.466

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



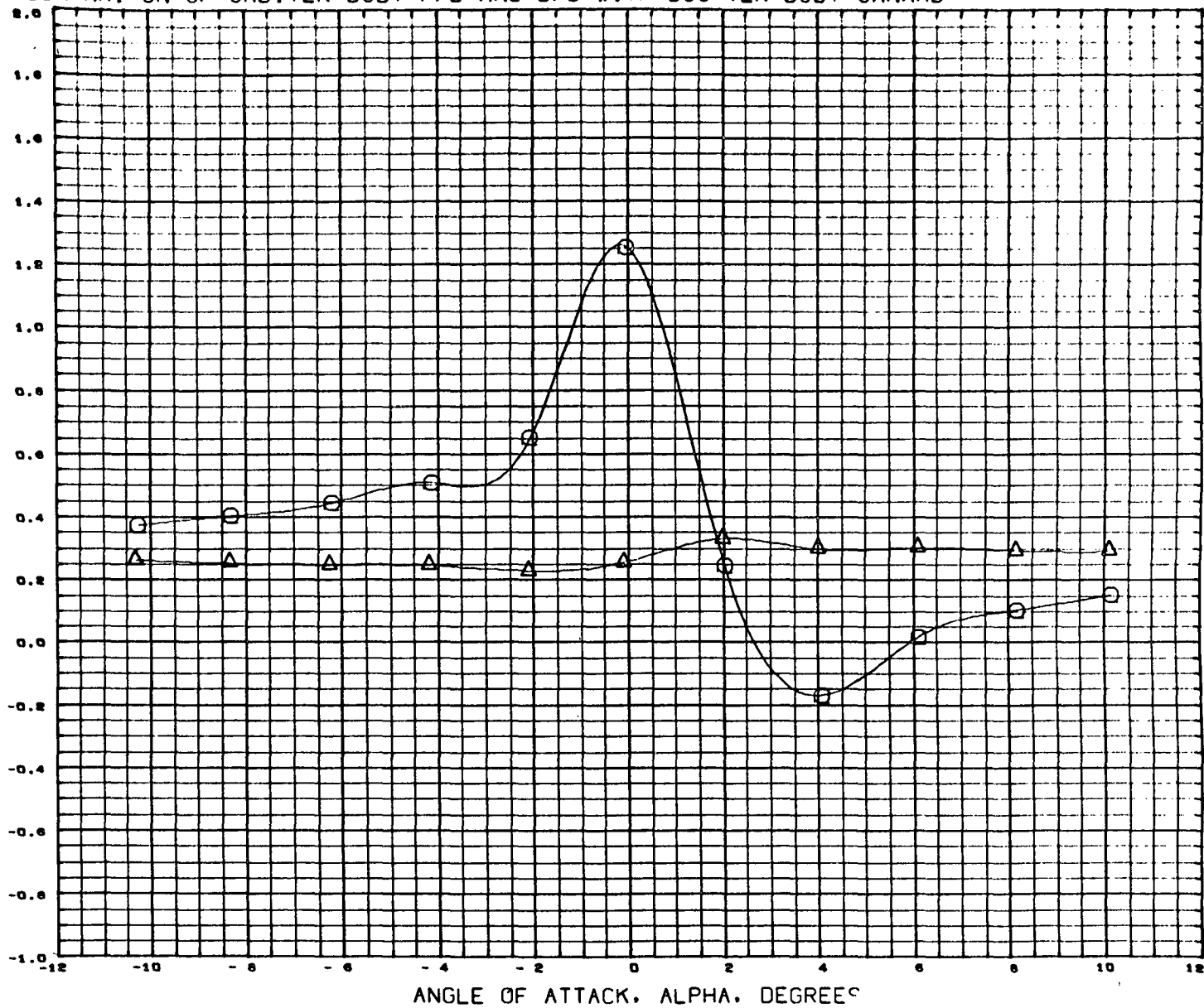
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B3

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0950 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.959

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L

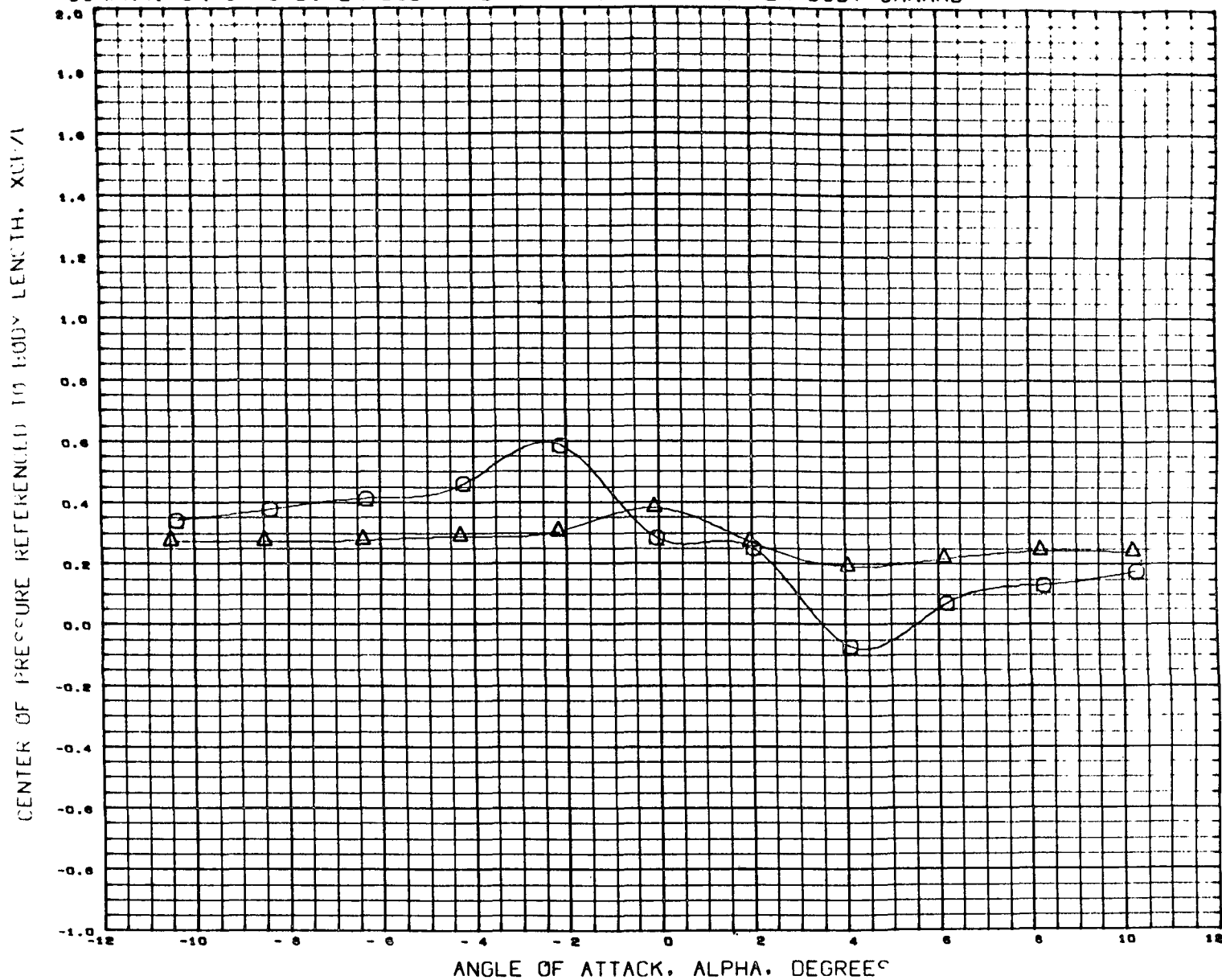


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+BS

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0039 SCALE |

MACH 0.599

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

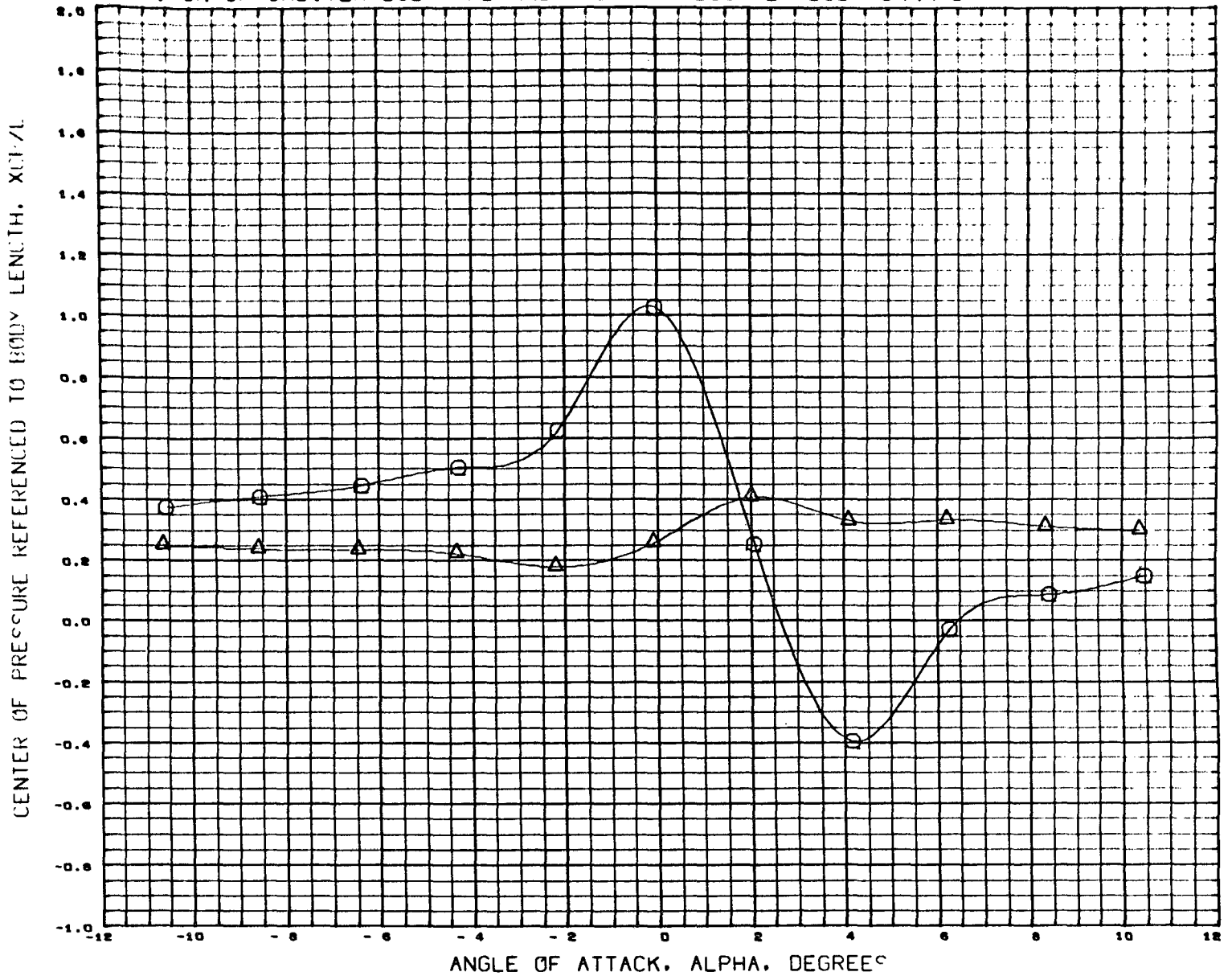


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B3

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.8980 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0930 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.895

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

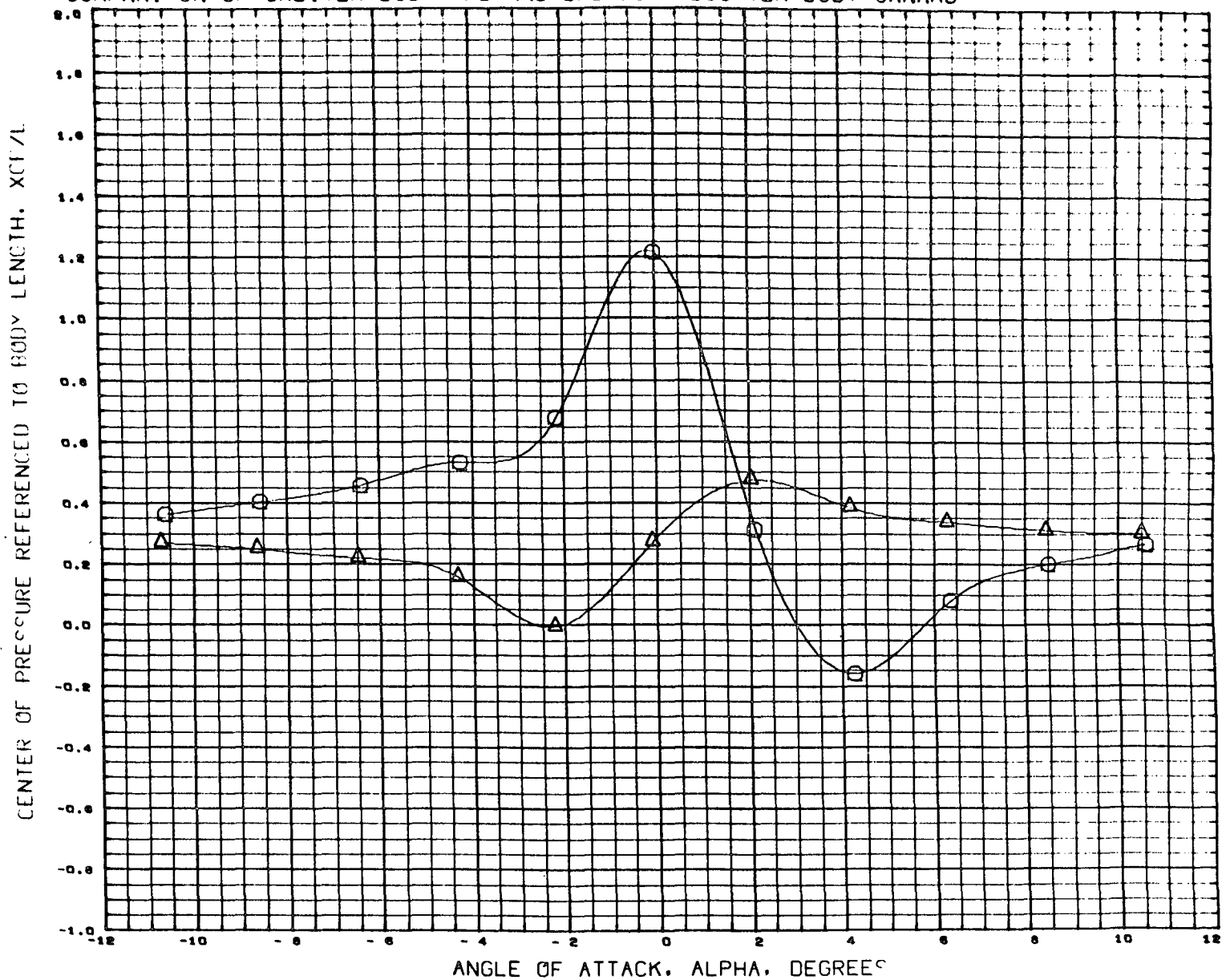


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.097

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.466

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

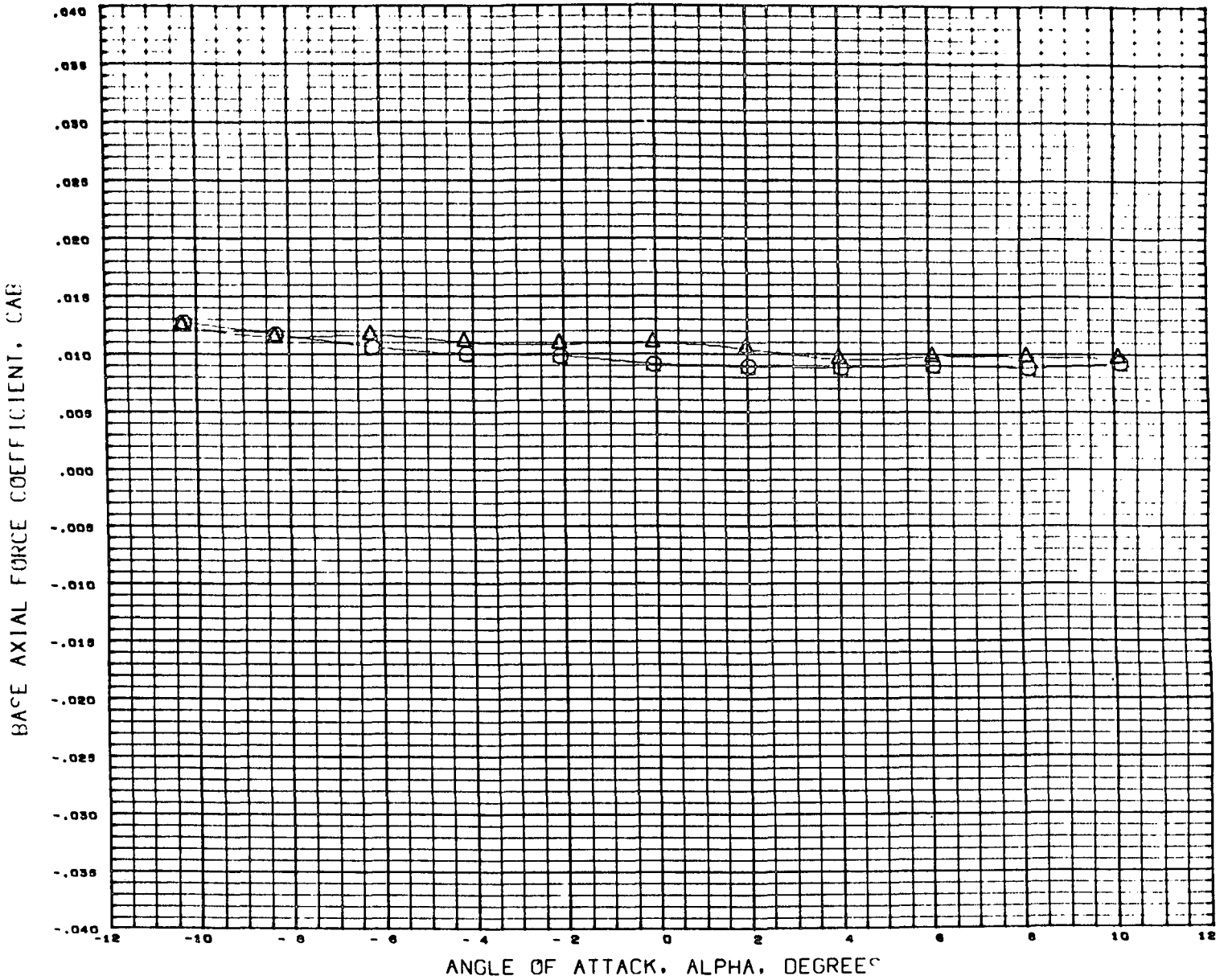


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.933

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

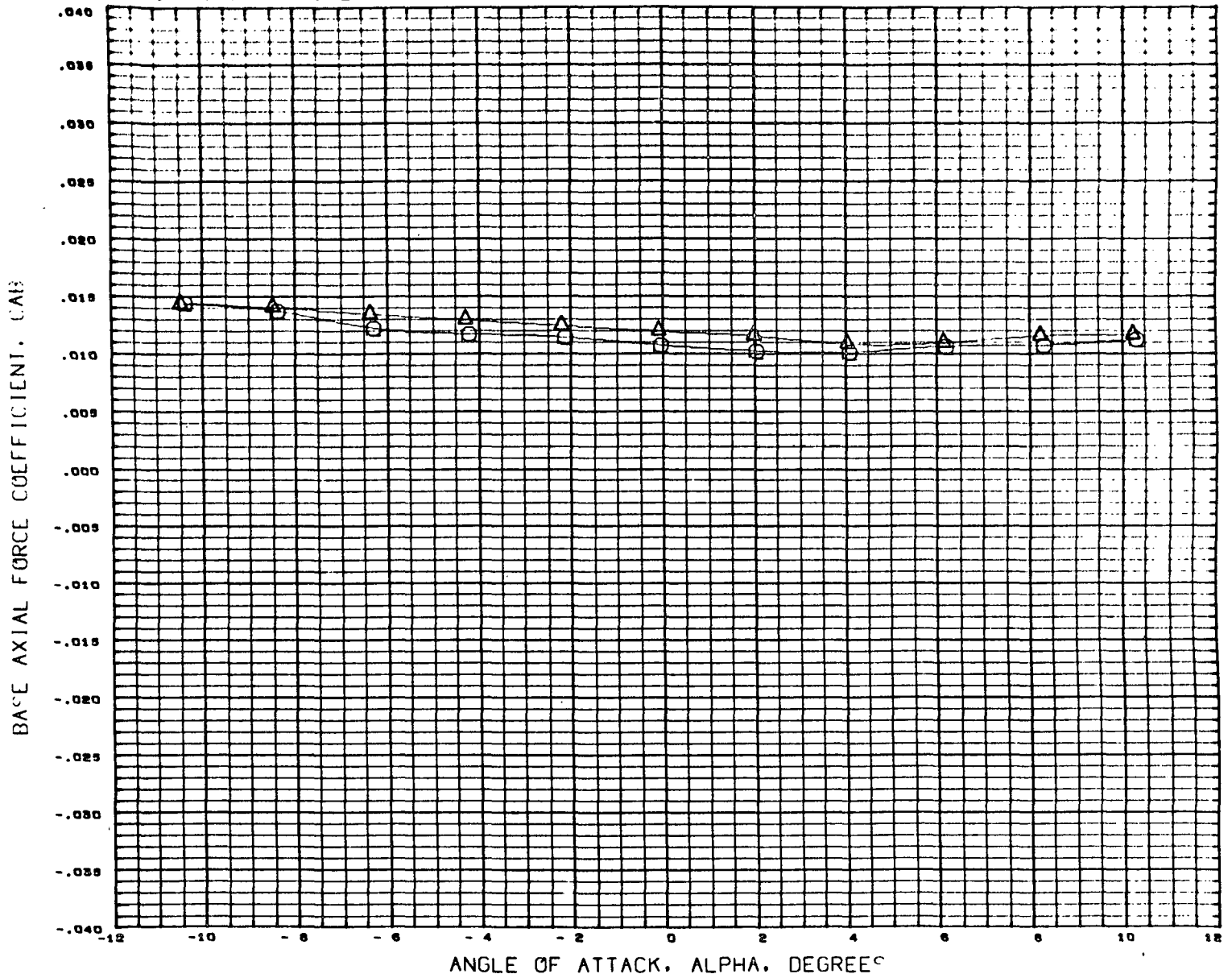


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) □ MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) Δ MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6360 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.999

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

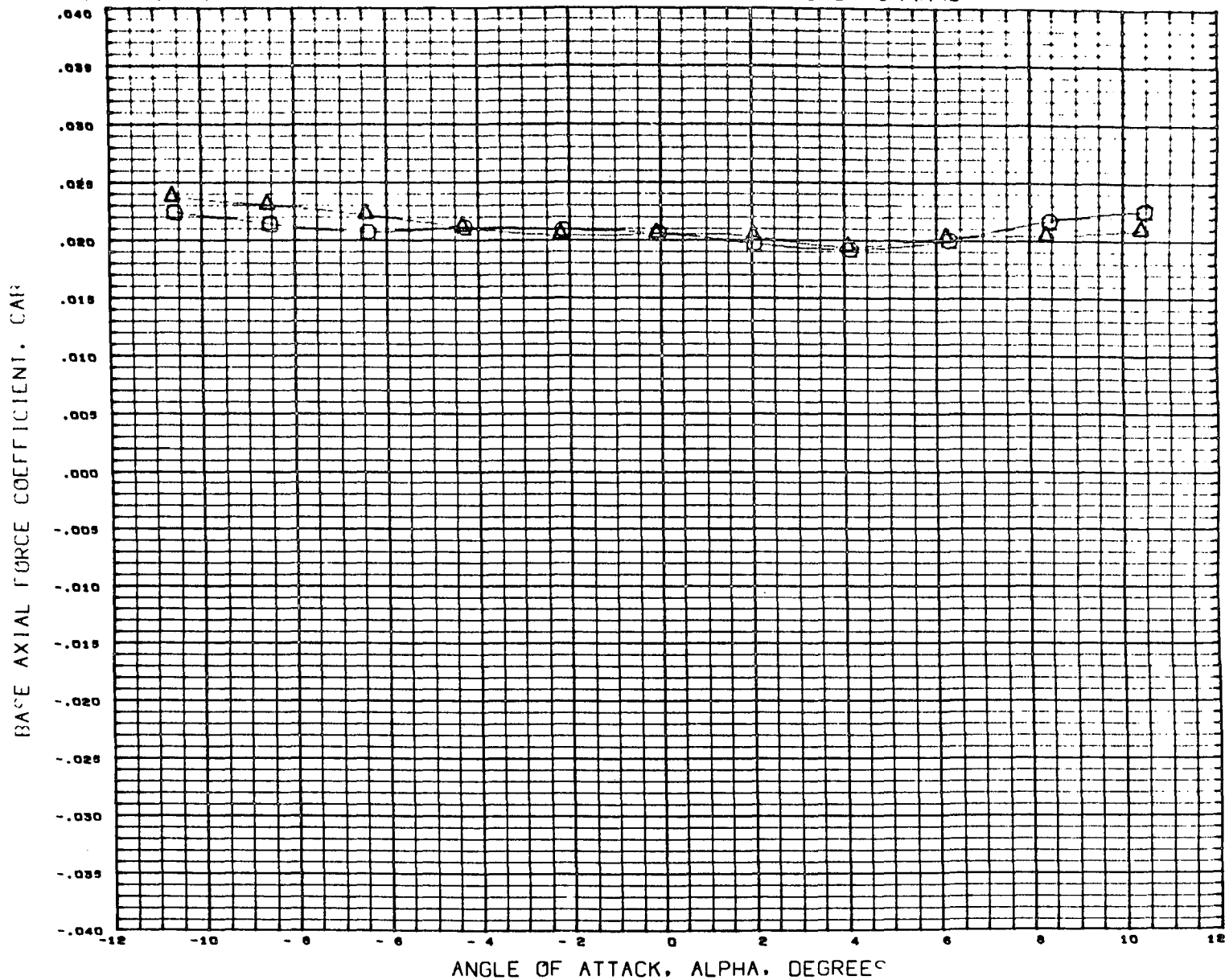


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0033 SCALE |

MACH 0.895

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

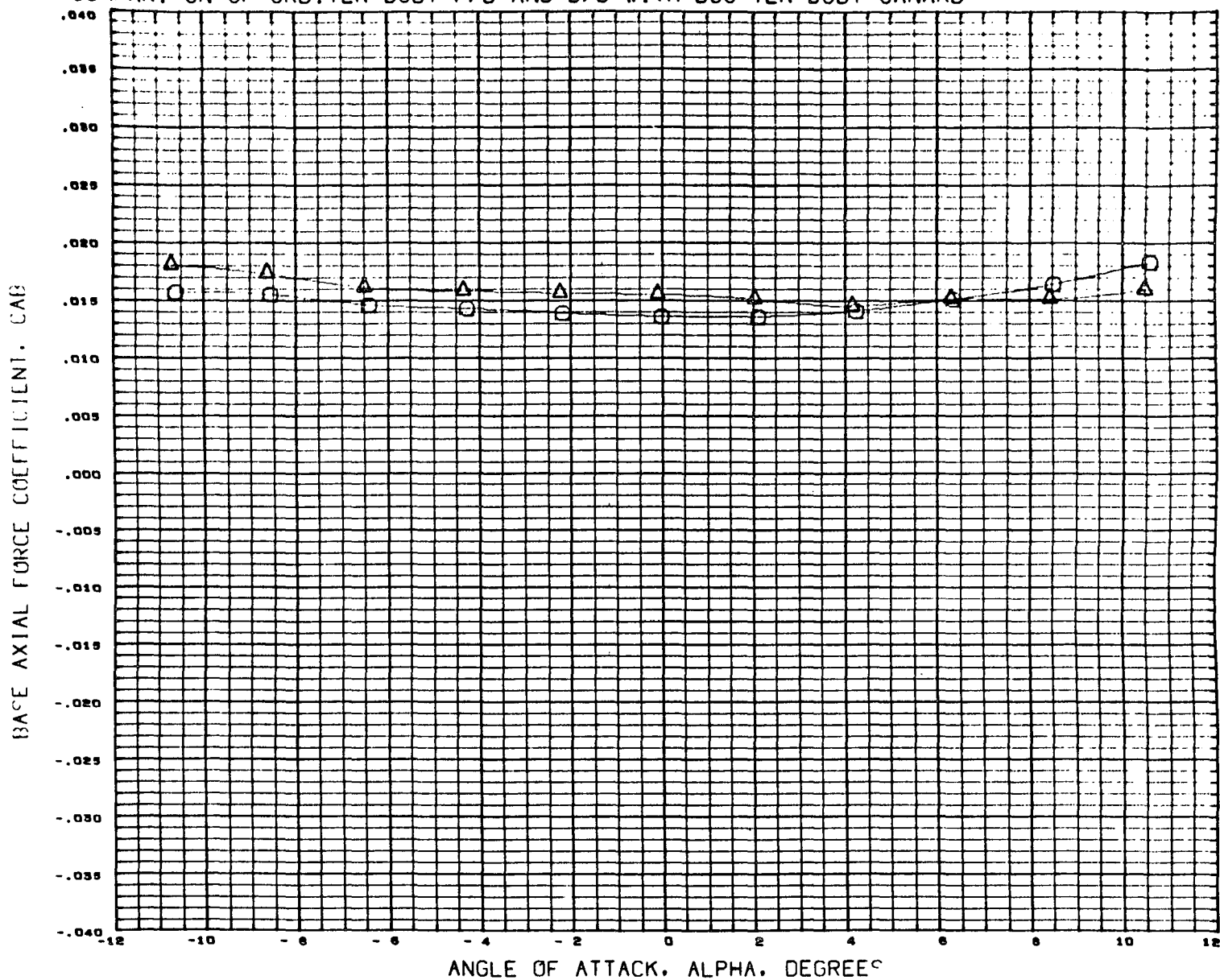


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+BS
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+BS

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0930 INCHES |
| | | | | BREF 0.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0039 SCALE |

MACH 1.097

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

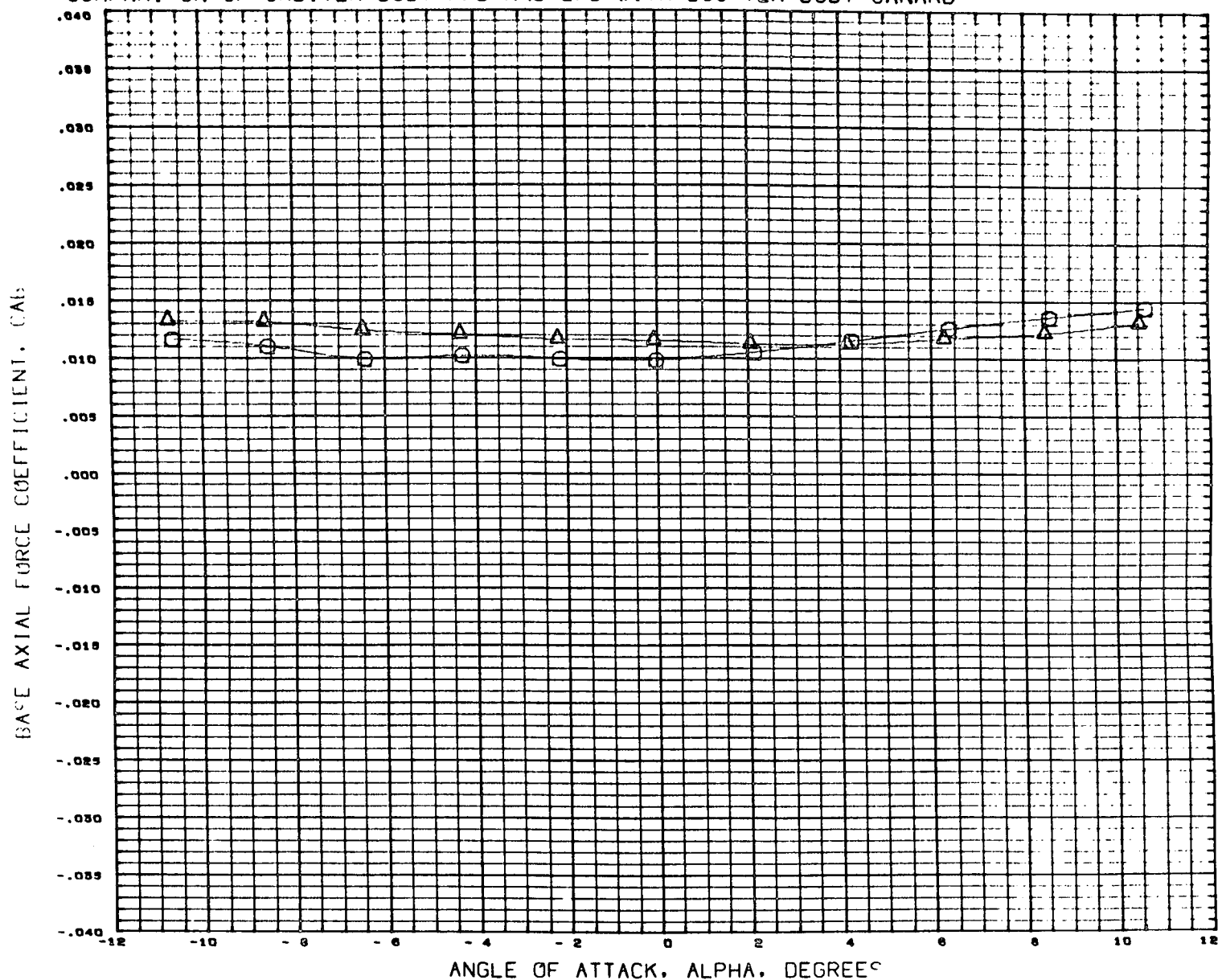


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6360 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.466

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



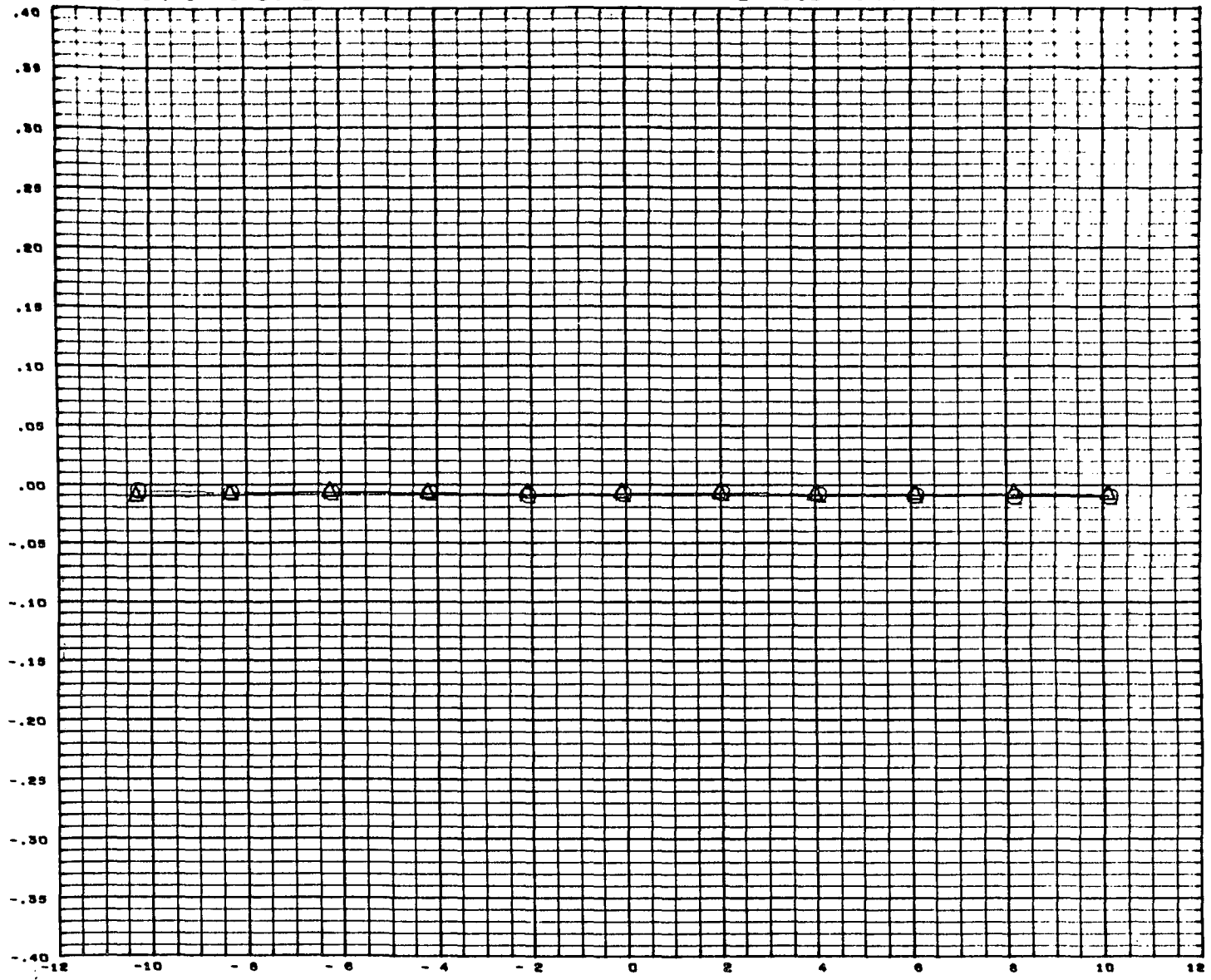
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (H3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.955

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAMP (PER DEGREE)

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



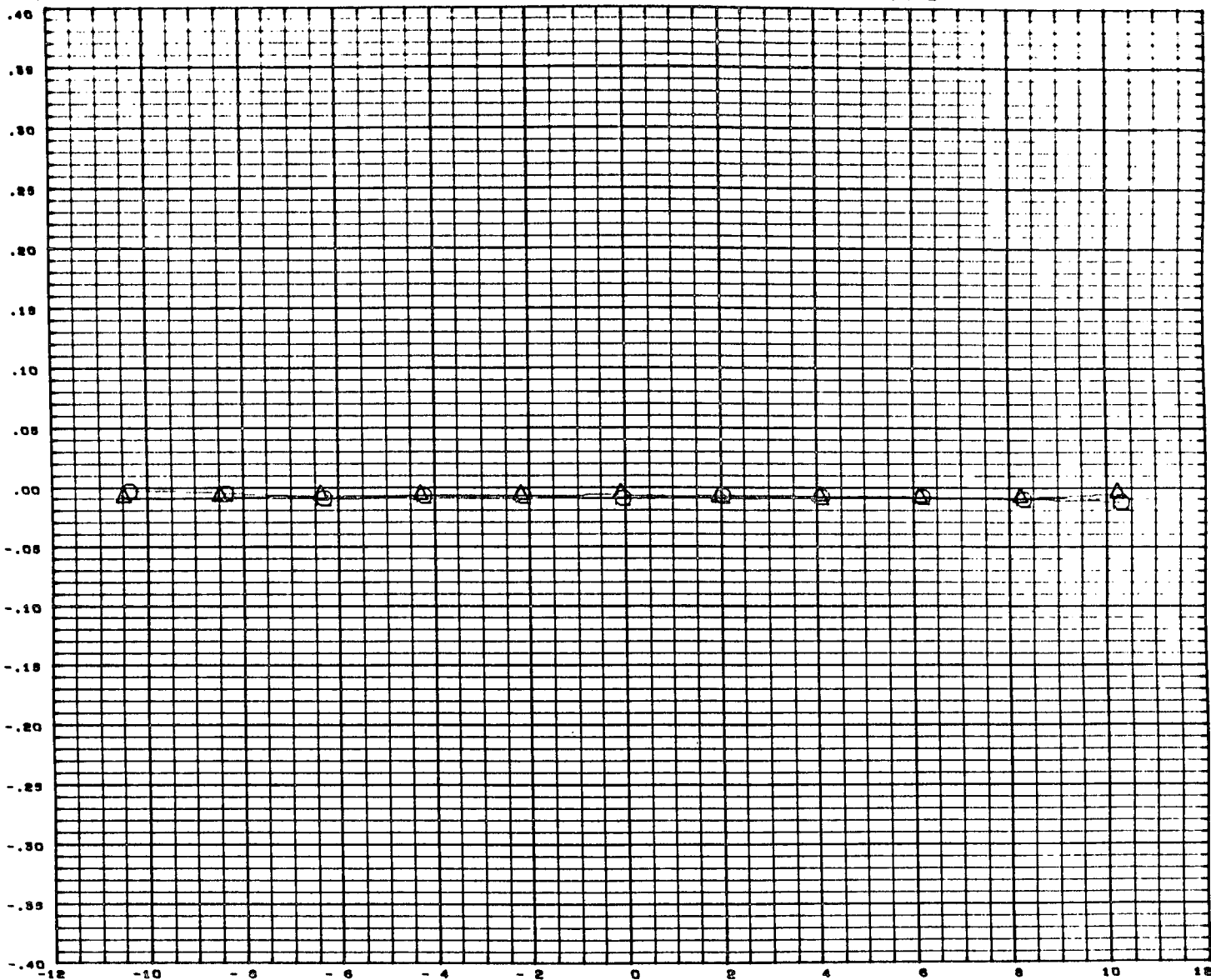
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (13249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.599

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMADP (PER DEGREE)

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



ANGLE OF ATTACK, ALPHA, DEGREE°

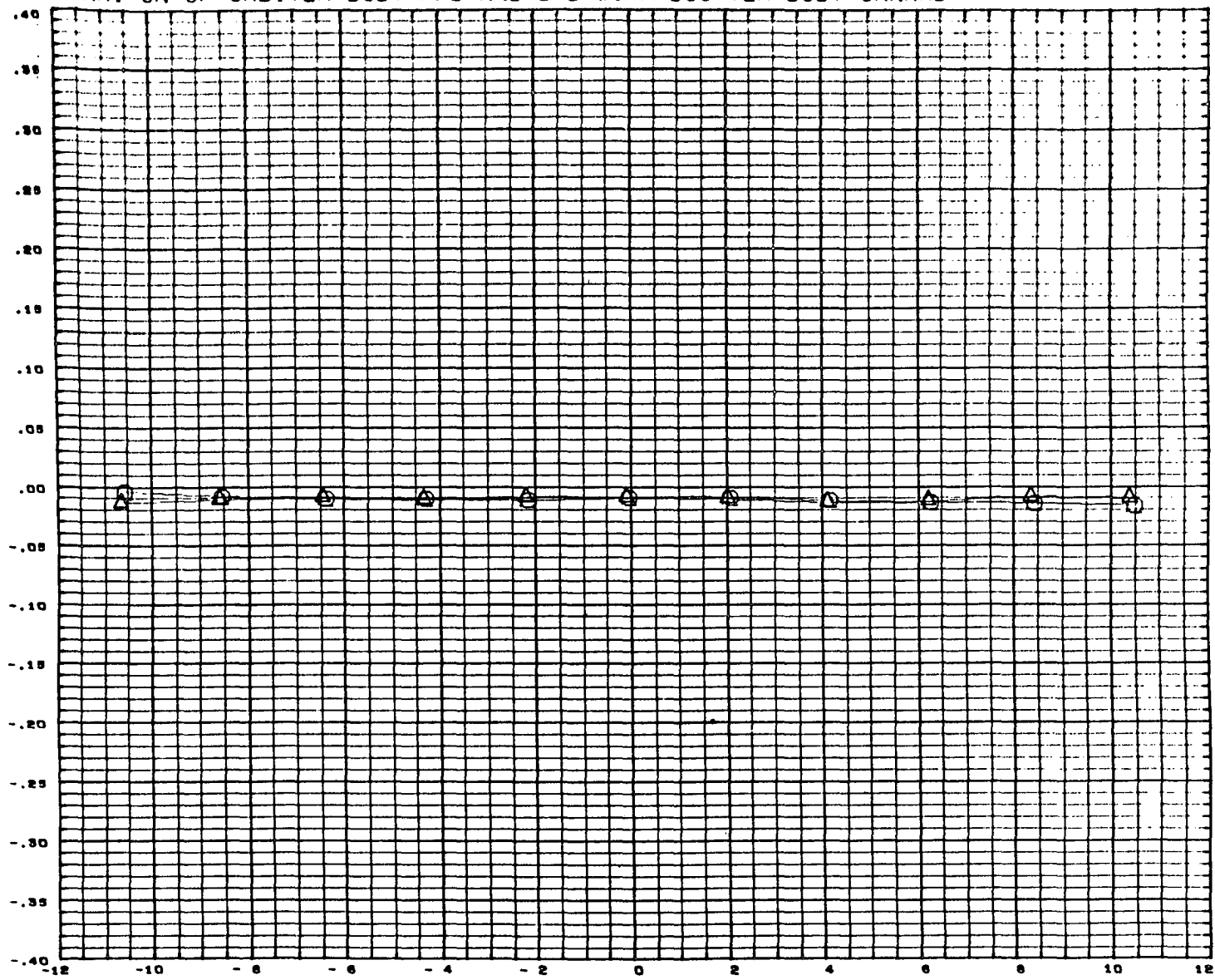
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 30 IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.095

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALT PER DEGREE

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

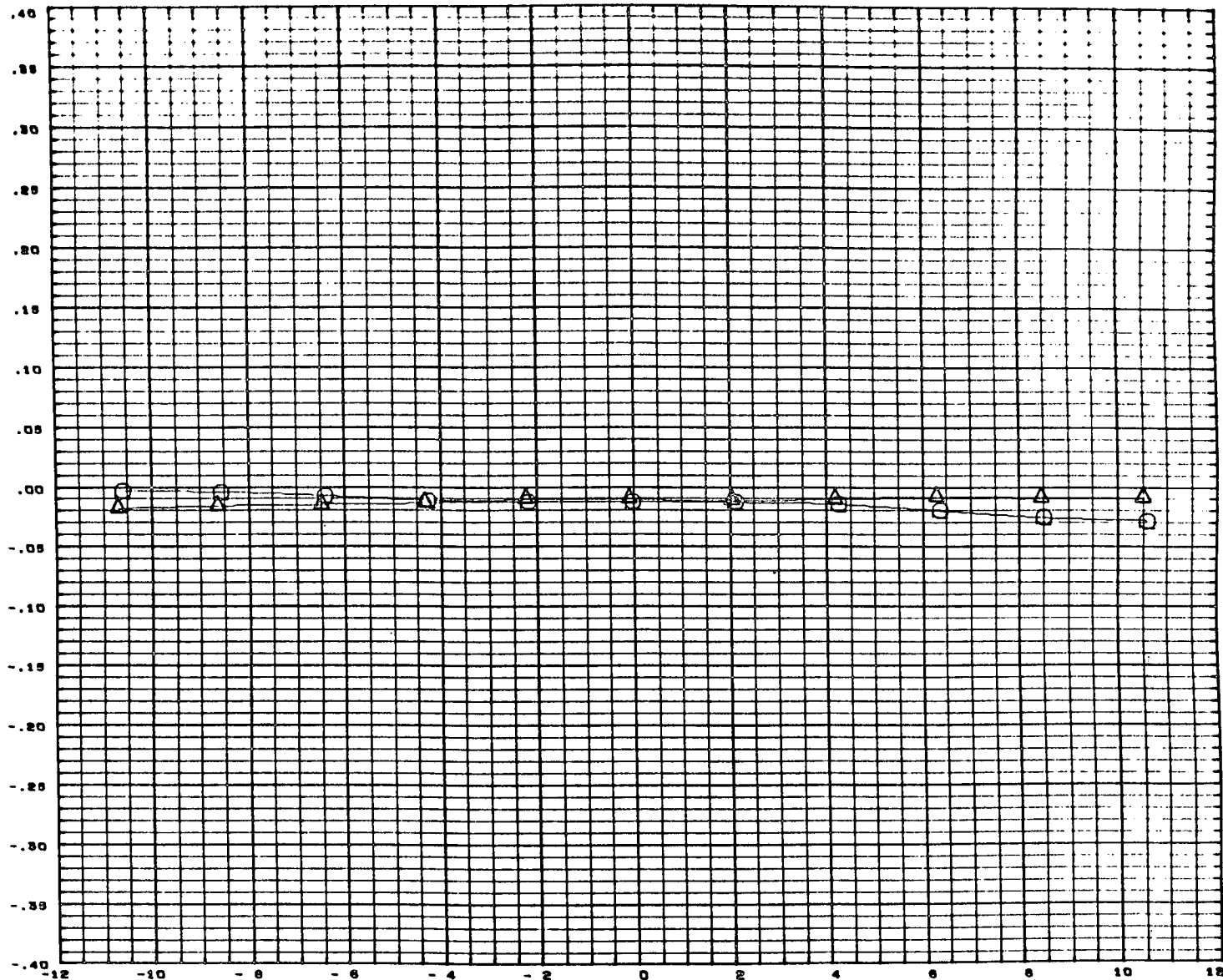


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-----------------|--------------------------------|-------|--------|--------|--------|-----------------------|---------------|
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 | 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0033 SCALE |



MACH 1.097

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM1/P (PER DEGREE)

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



ANGLE OF ATTACK, ALPHA, DEGREE

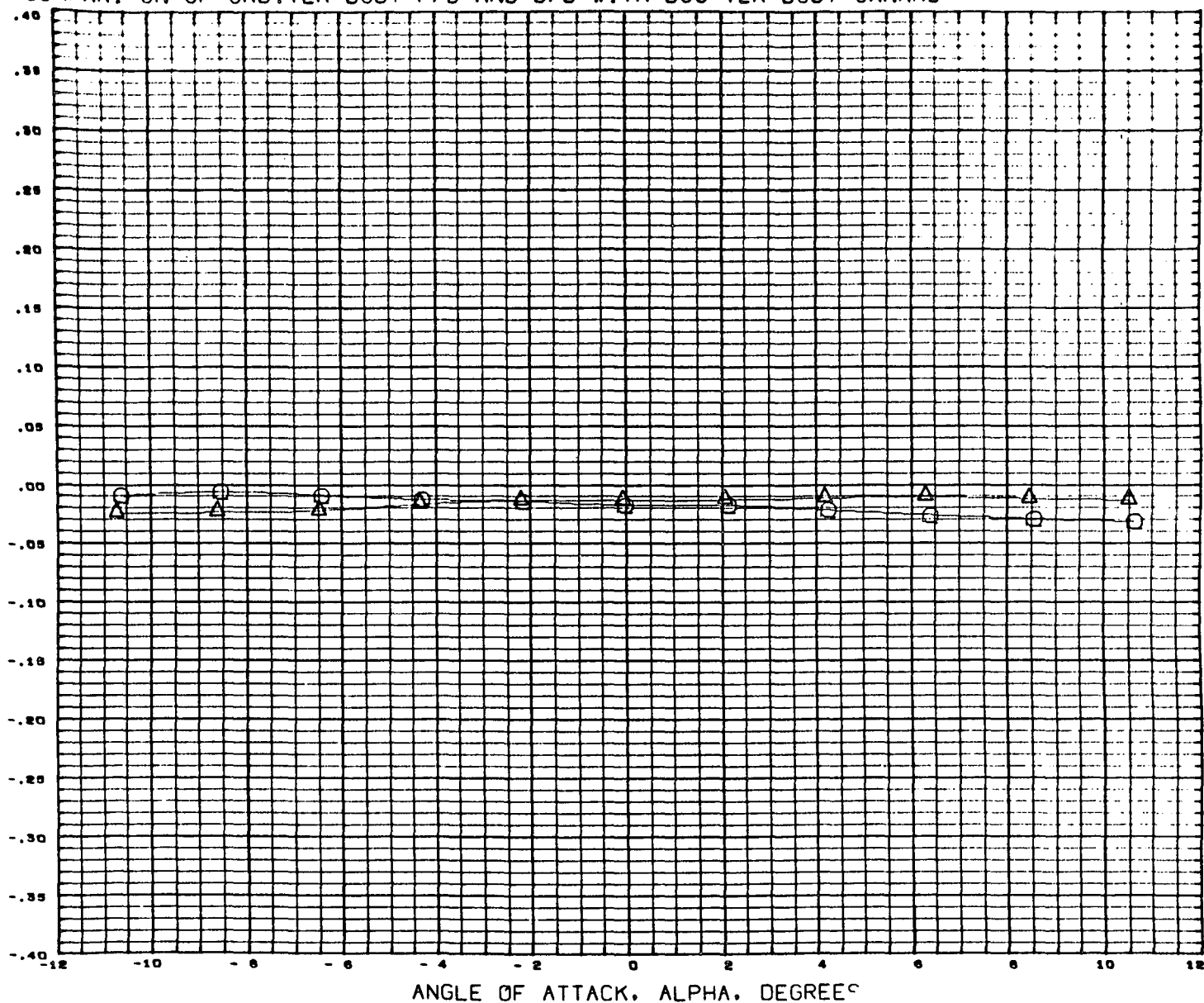
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13212A)  MSFC490 NR/GD LAUNCH B20C4B+B5
 (13249A)  MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.400

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAMP (PER DEGREE)

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

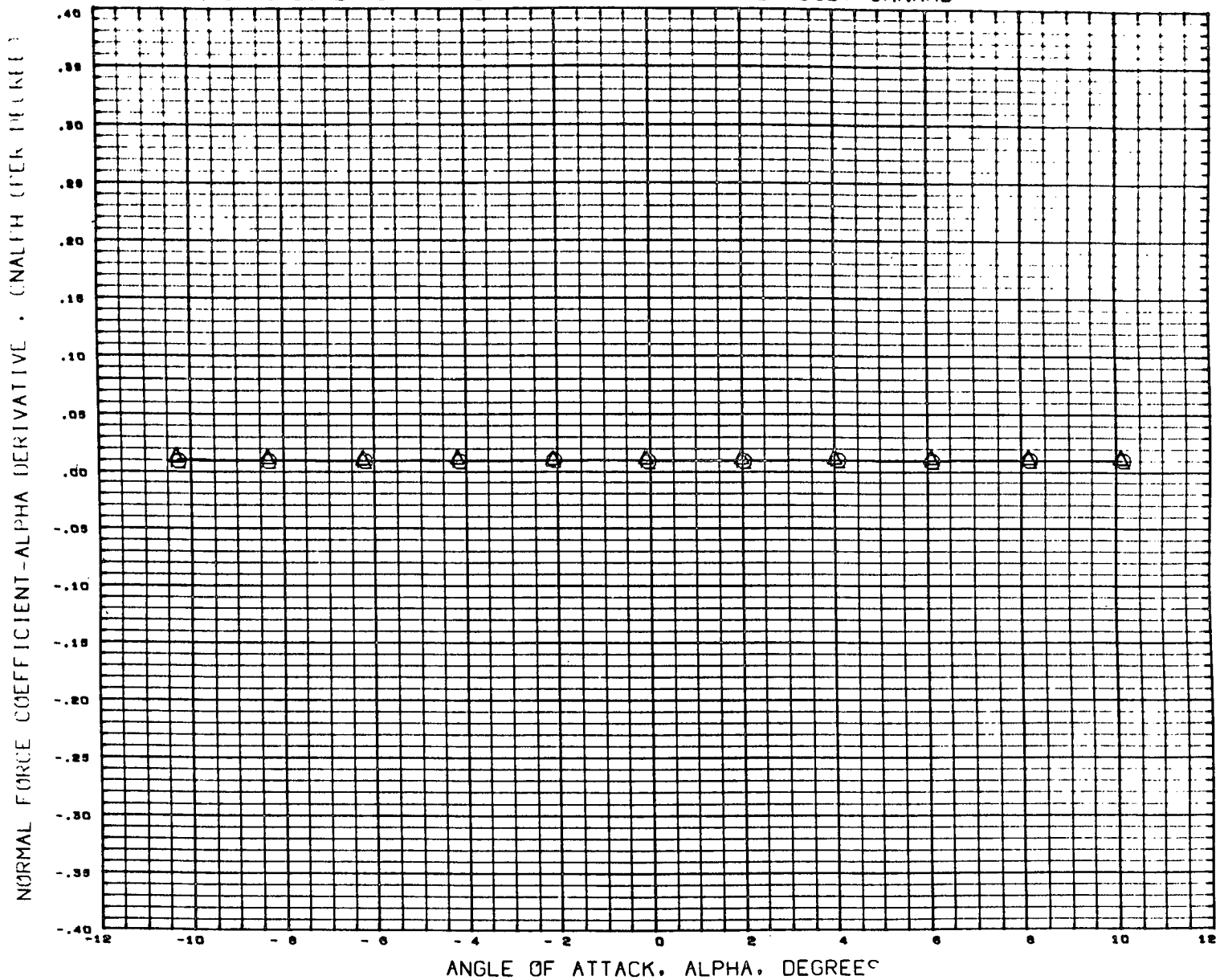


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.955

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD



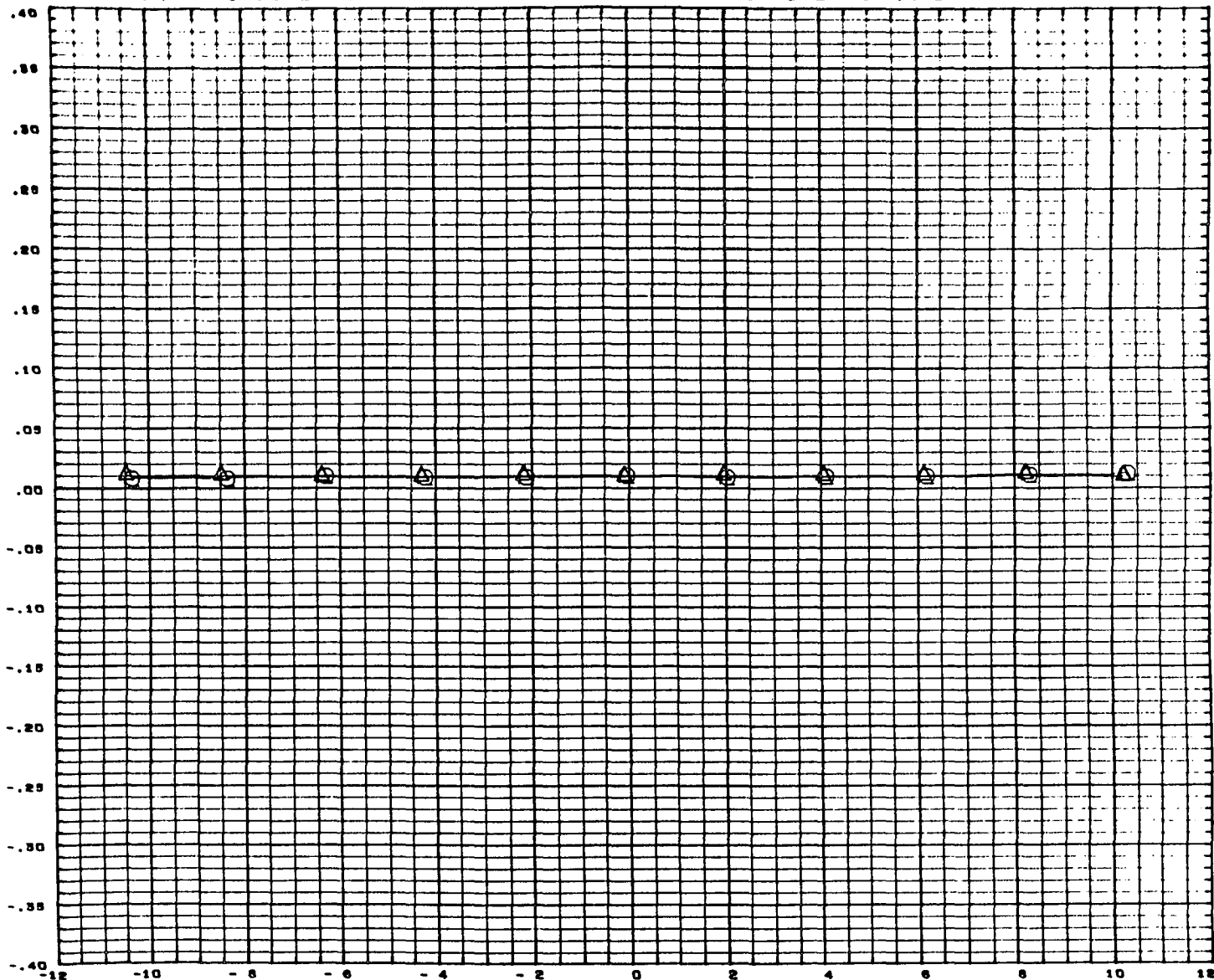
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13212A) M5PC490 NR/GD LAUNCH B20C4B+B5
 (13249A) M5PC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0033 SCALE |

MACH 0.999

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREES

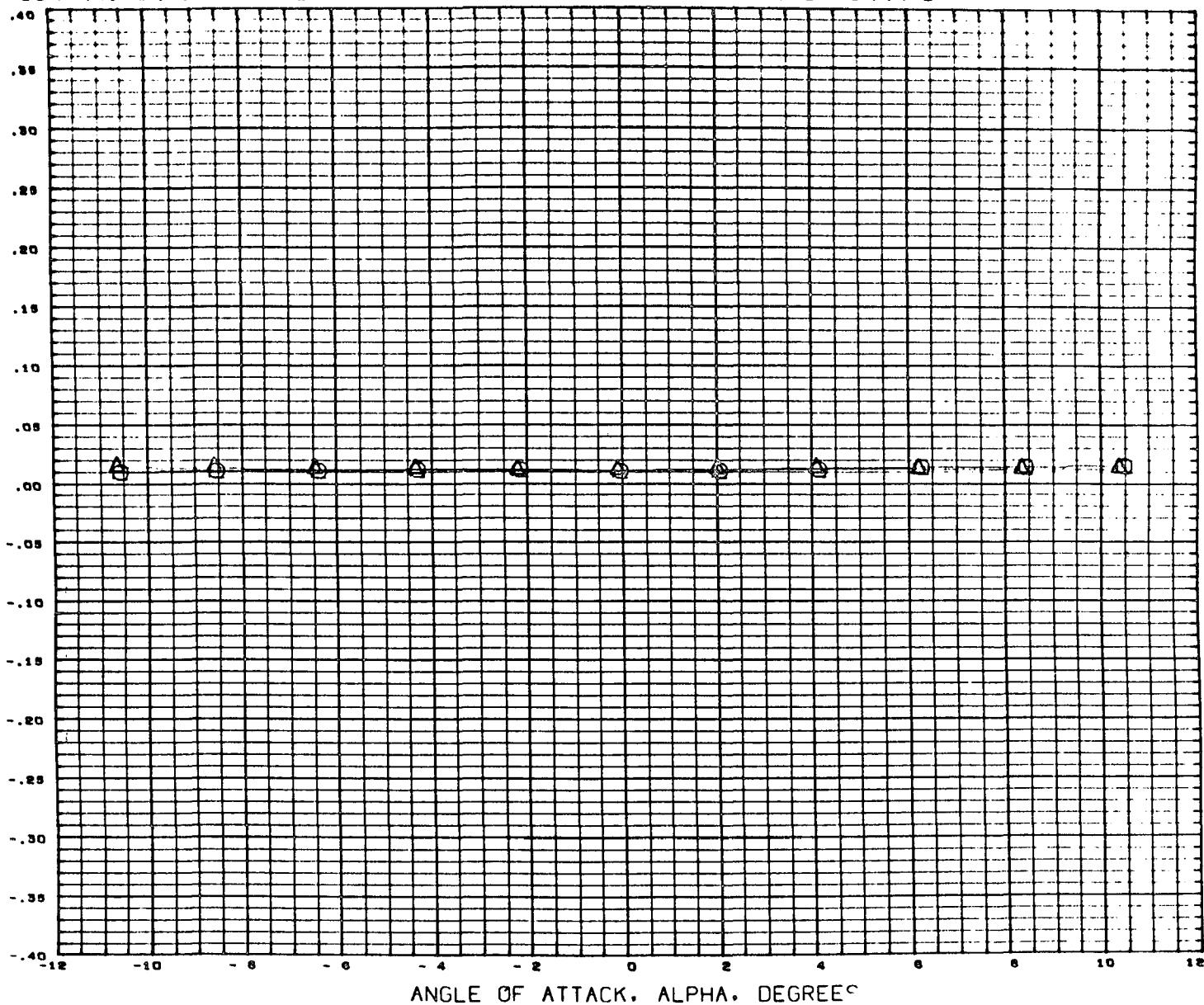
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (13249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.895

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CANARD (PER DEGREE)



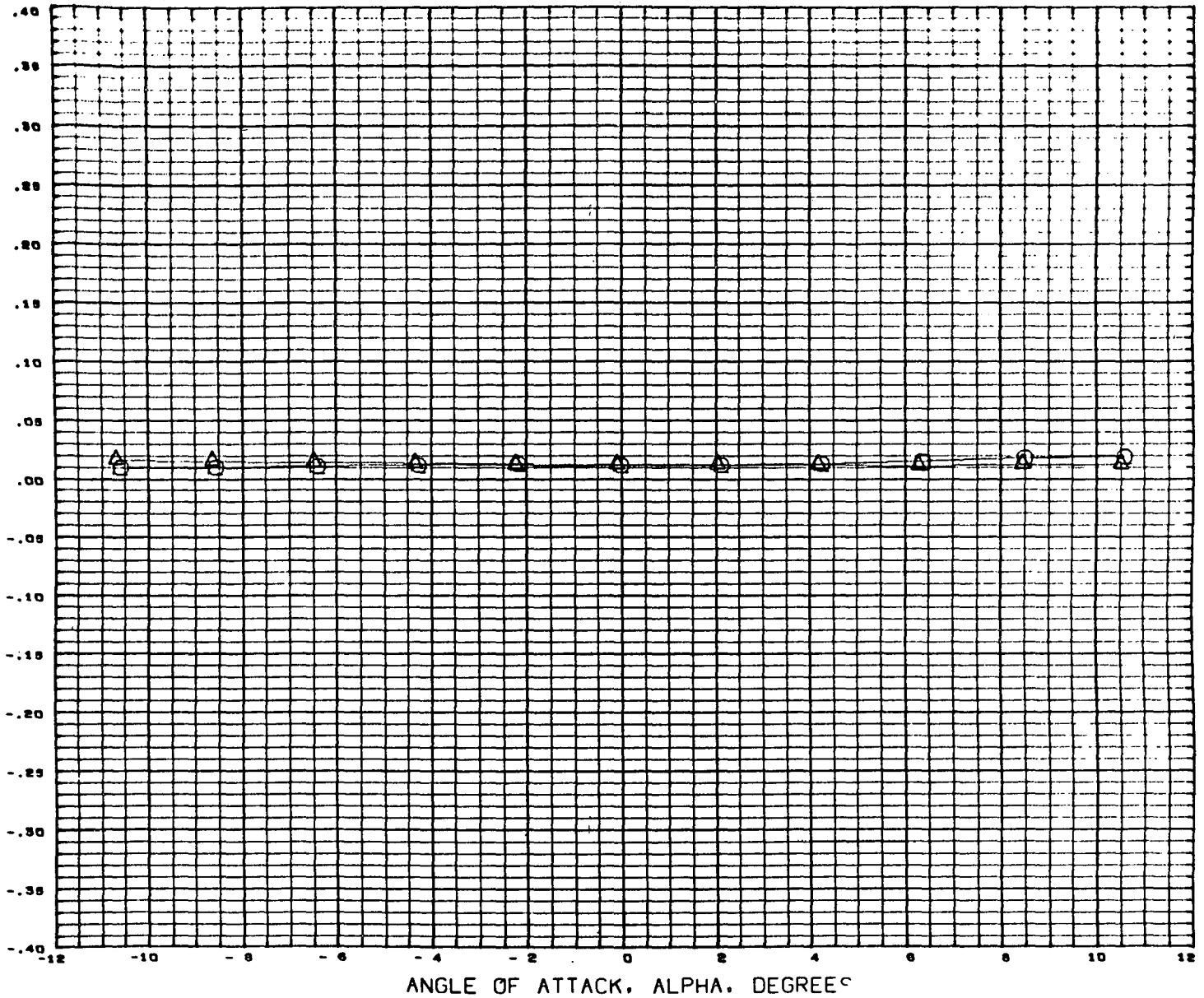
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B3 |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B3 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6960 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0039 SCALE |

MACH 1.097

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, UNALPH (PER DEGREE)



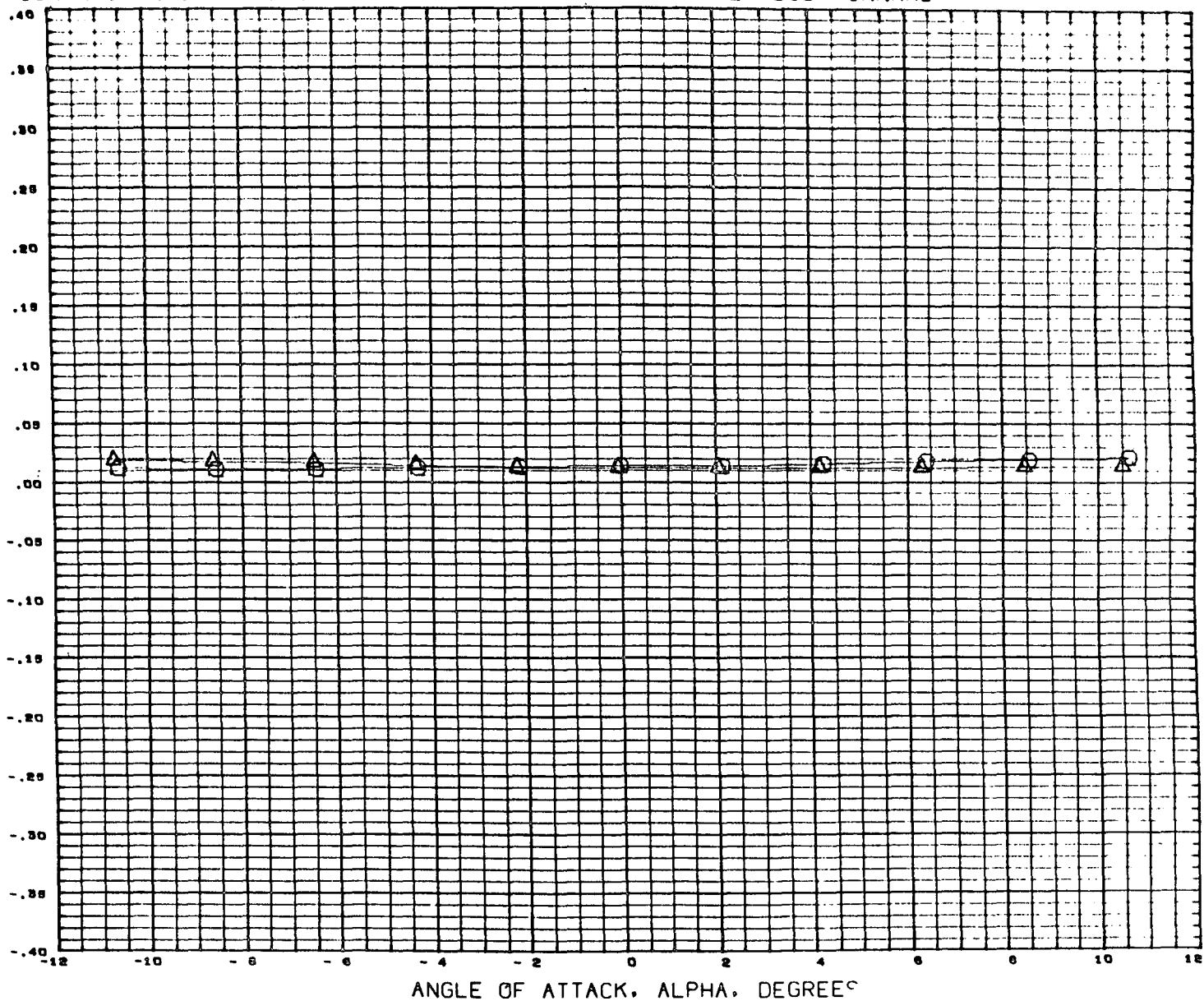
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.466

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CANALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREE°

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (13212A) | MSFC490 NR/GD LAUNCH B20C4B+BS |
| (13249A) | MSFC490 NR/GD LAUNCH B20C4B+BS |

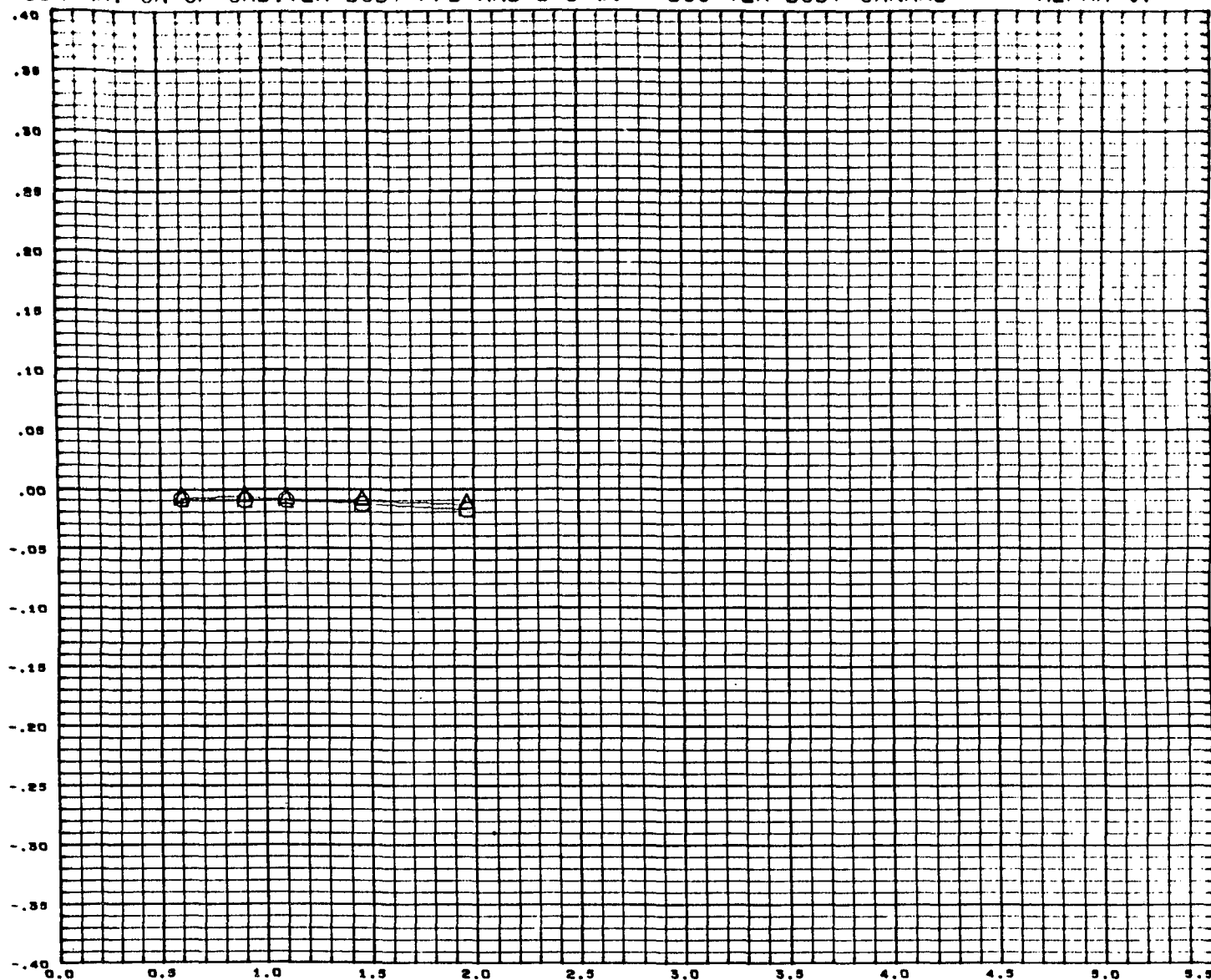
| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0990 INCHES |
| | | | | BREF 8.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.955

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - (CMALP) PER DEGREE

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|--------------------------------|
| (J3212A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |
| (J3249A) | MSFC490 NR/GD LAUNCH B20C4B+B5 |

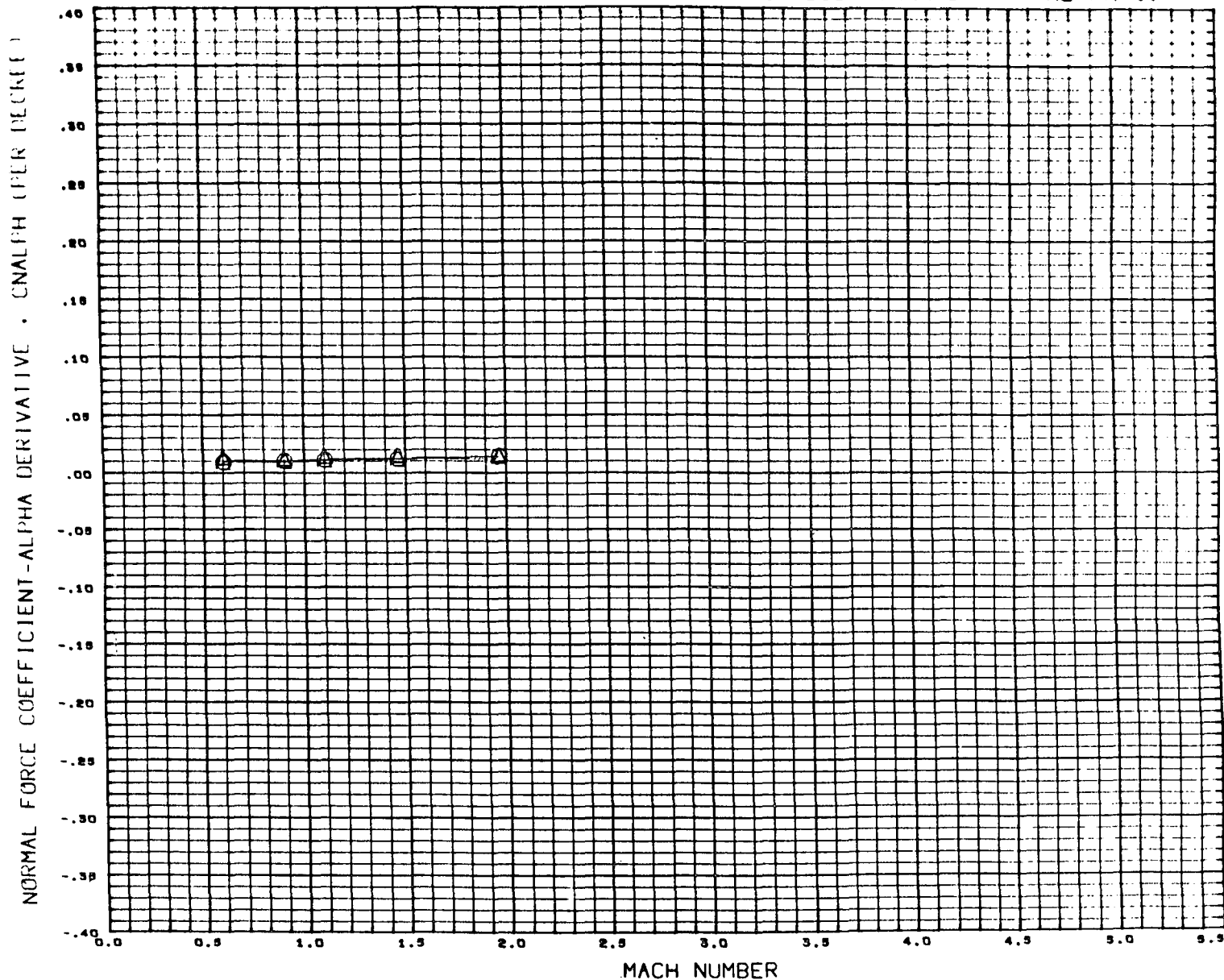
MACH NUMBER

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0039 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

ALPHA=0.



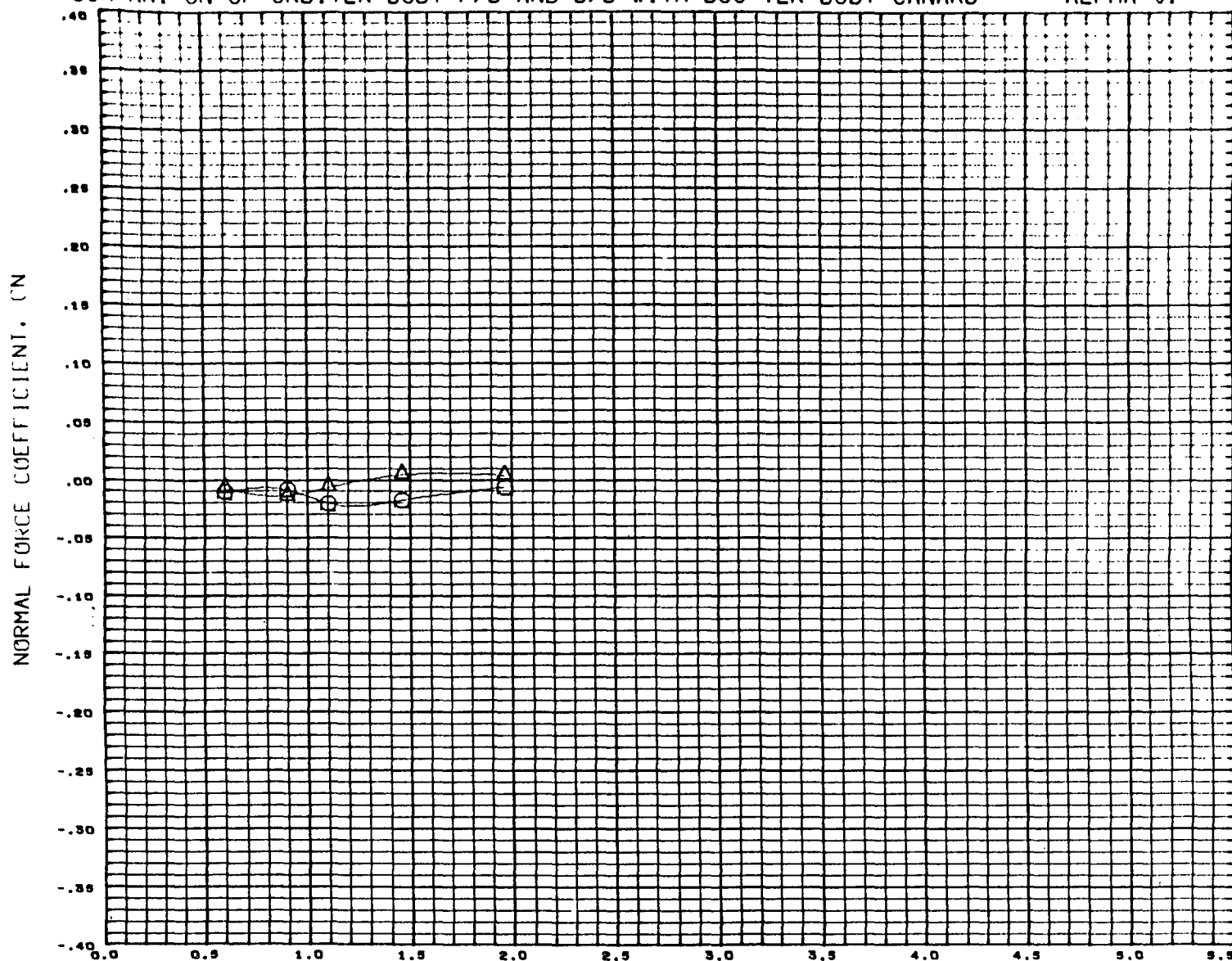
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (J3212A) M8FC490 NR/GD LAUNCH B20C4B+B5
 (J3249A) M8FC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

ALPHA=0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (K3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

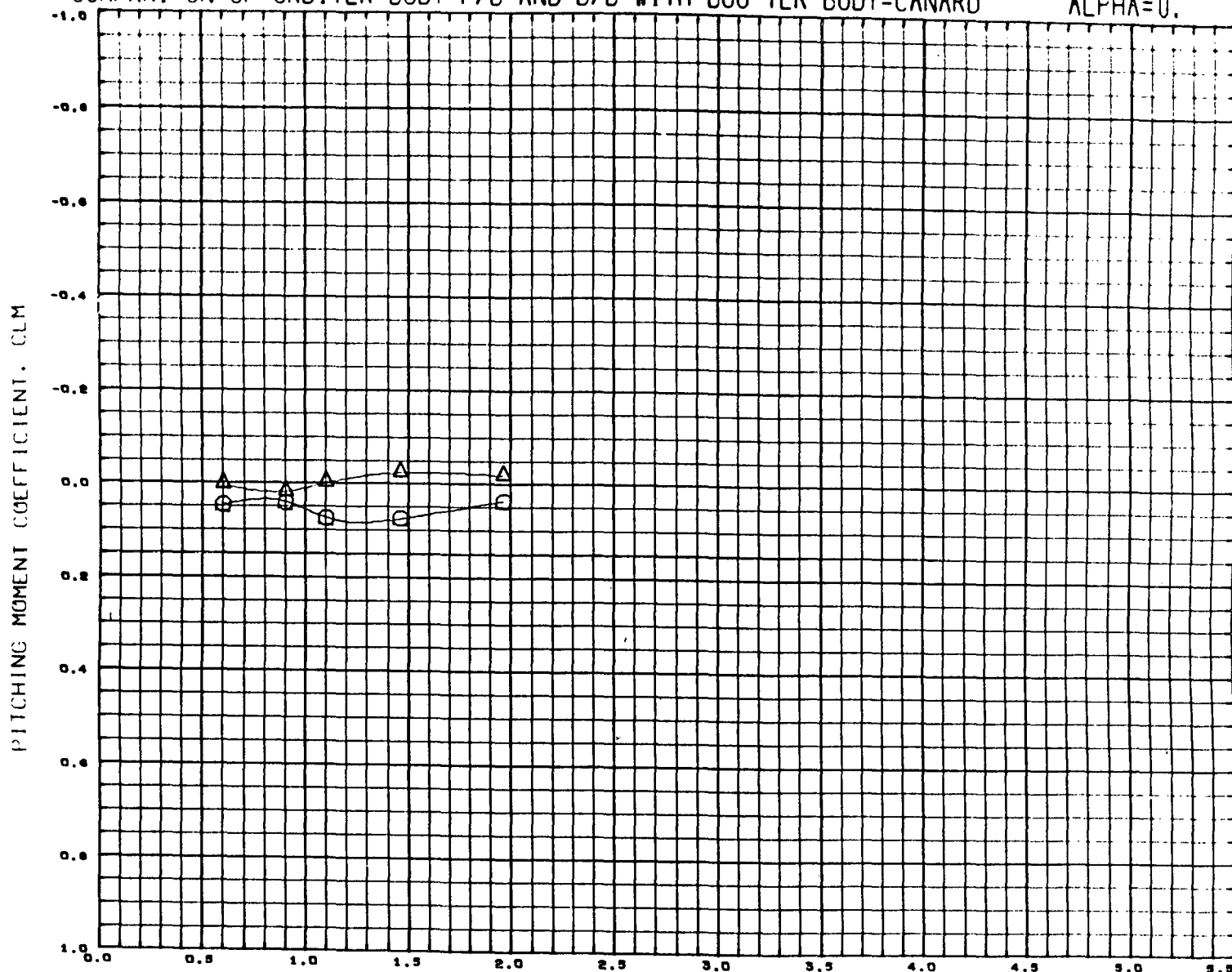
MACH NUMBER

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

ALPHA=0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3212A) MSFC490 NR/GD LAUNCH B20C48+B5
 (K3249A) MSFC490 NR/GD LAUNCH B20C48+B5

MACH NUMBER

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF | 15.6960 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 0.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY P/B AND B/B WITH BOOSTER BODY-CANARD

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



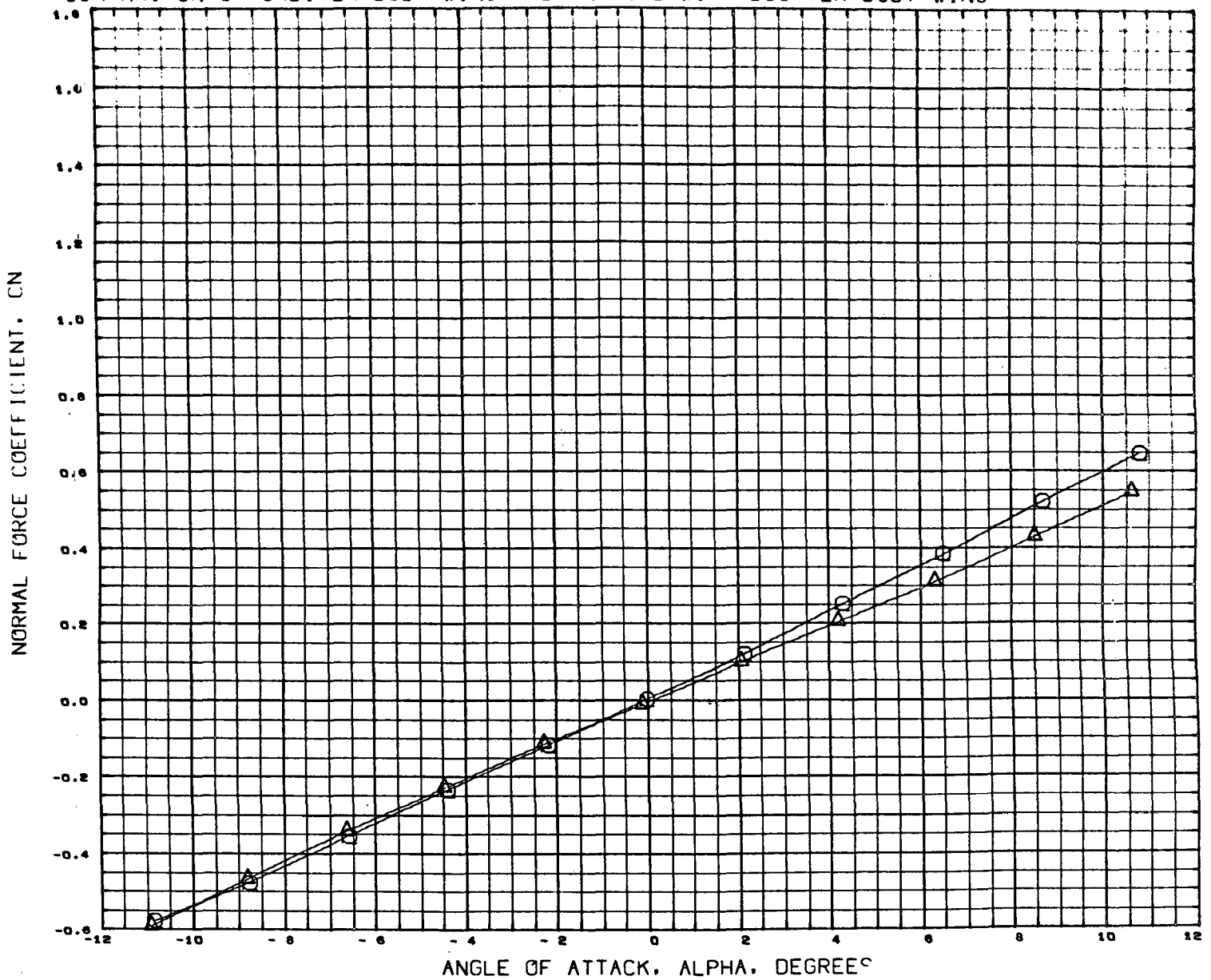
MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3212A) MSFC490 NR/GD LAUNCH B20C4B+B5
 (K3249A) MSFC490 NR/GD LAUNCH B20C4B+B5

| BETA | CANARD | ORBINC | POSITN | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 1.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 4.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



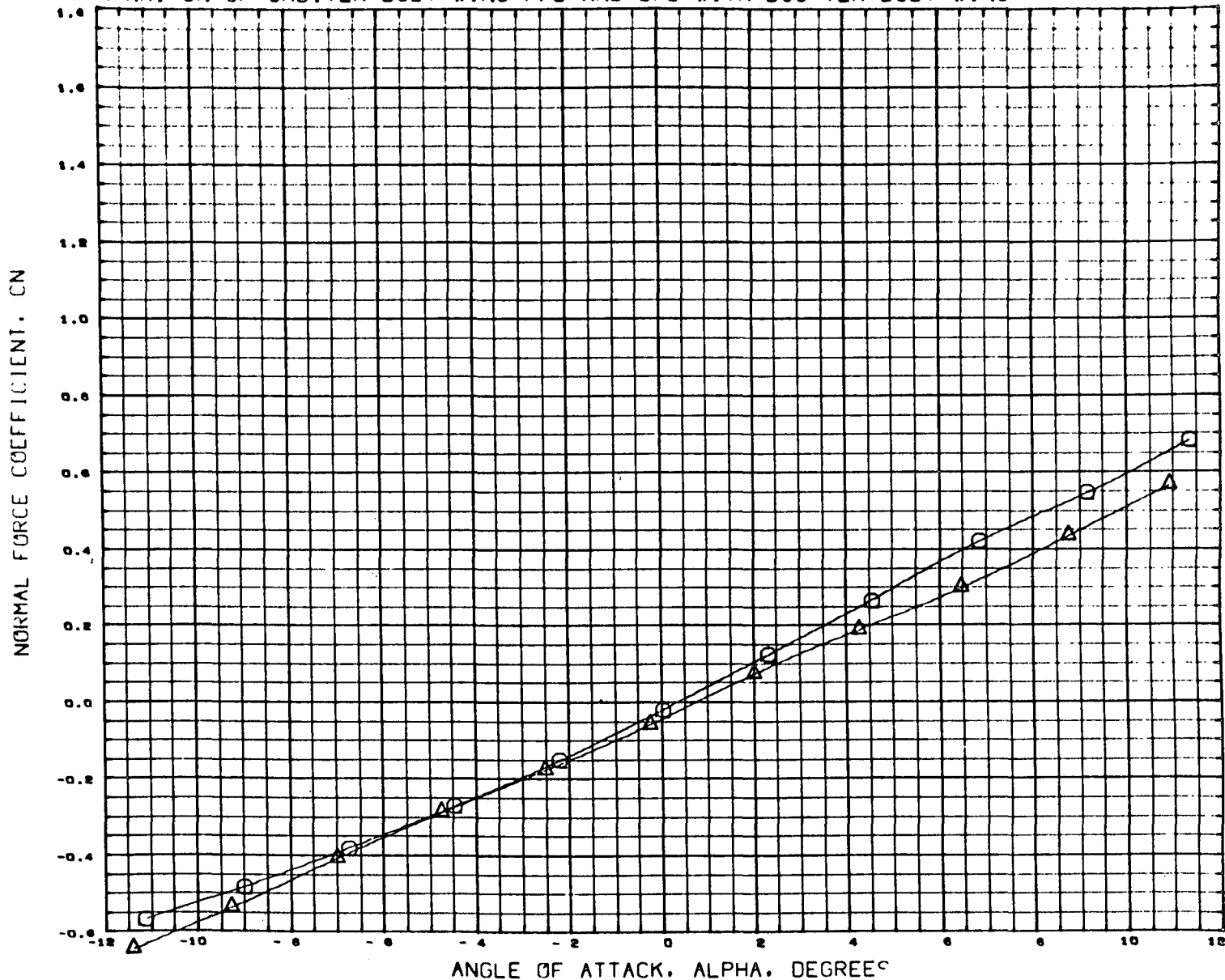
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H321QA) ○ MSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3246A) △ MSFC490 NR/GD LAUNCH B20W14+B5W17

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6960 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0950 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0033 SCALE

MACH 0.600

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

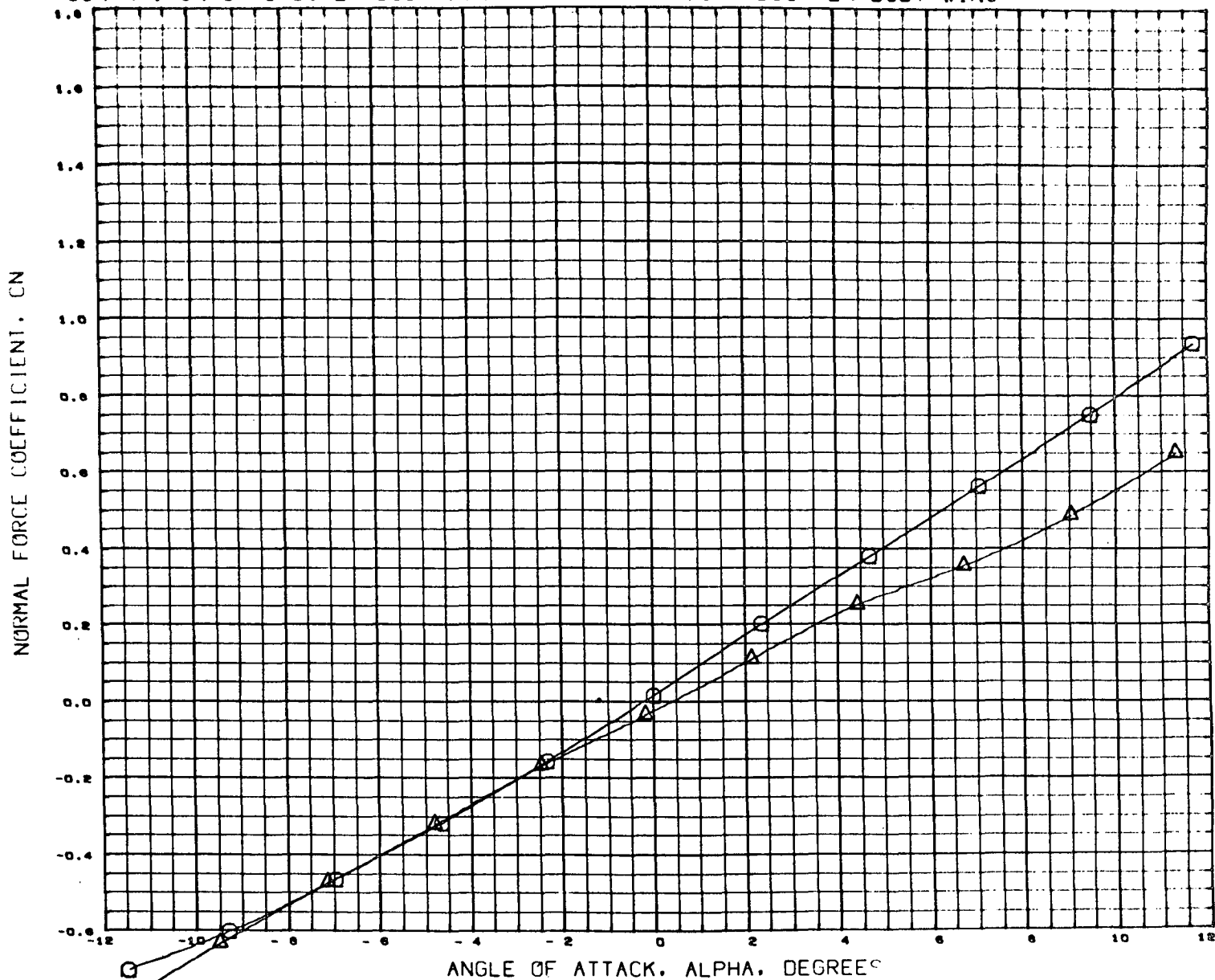


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION |
|--------|--------|-------|--------|-----------------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.902

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



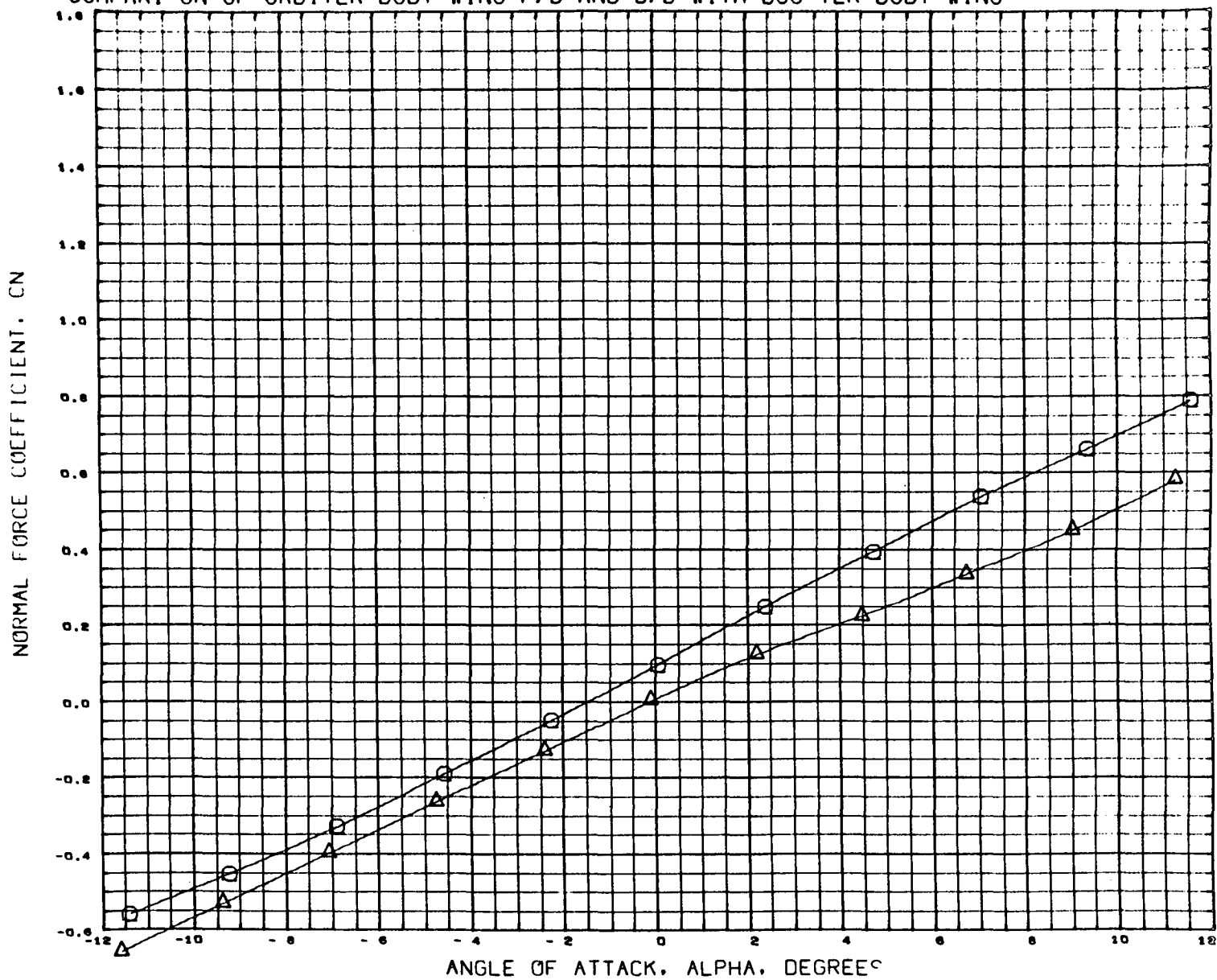
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

ORBITC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6360 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.100

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



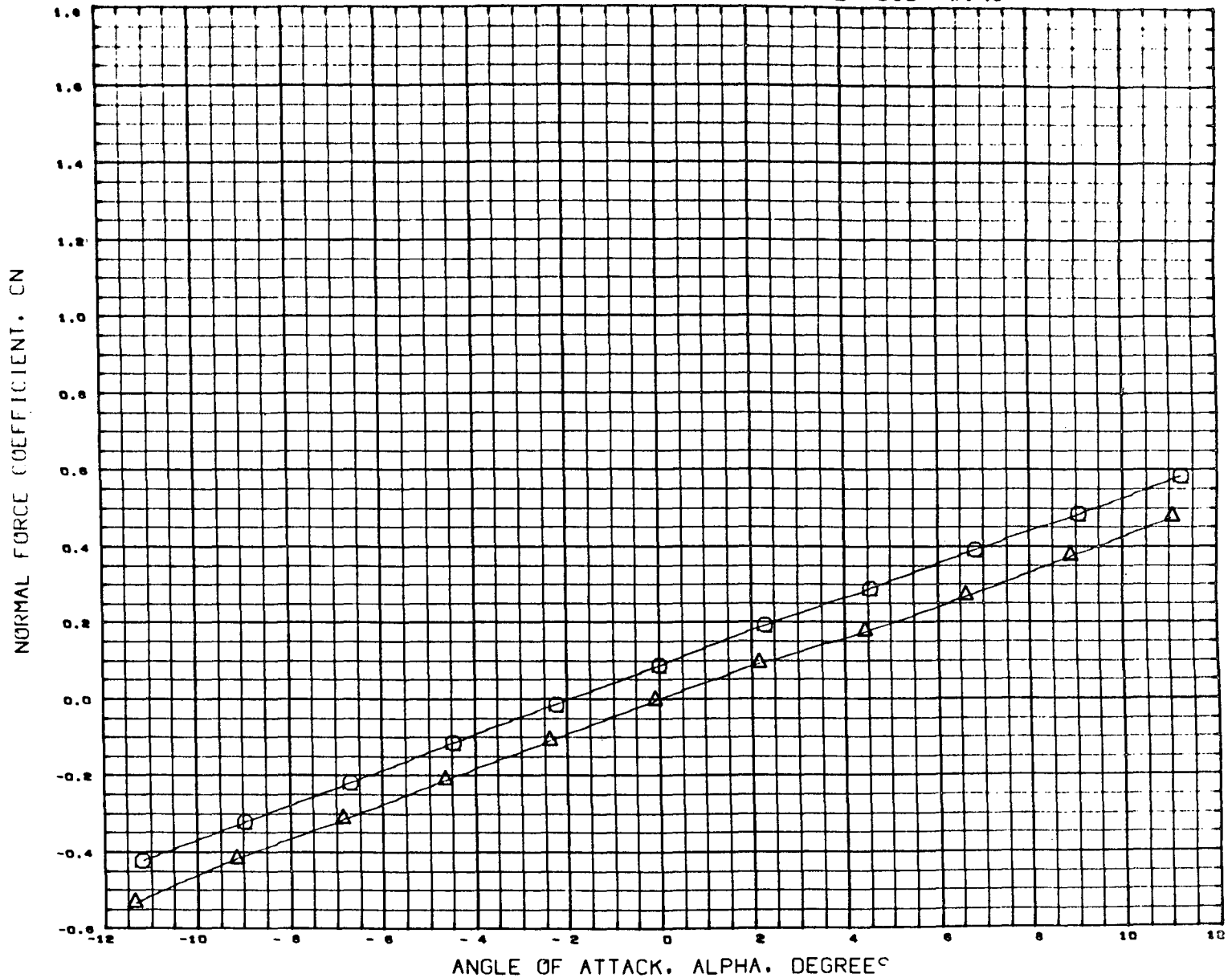
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | 30 IN |
| LREF | 3.0930 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0033 | SCALE |

MACH 1.468

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



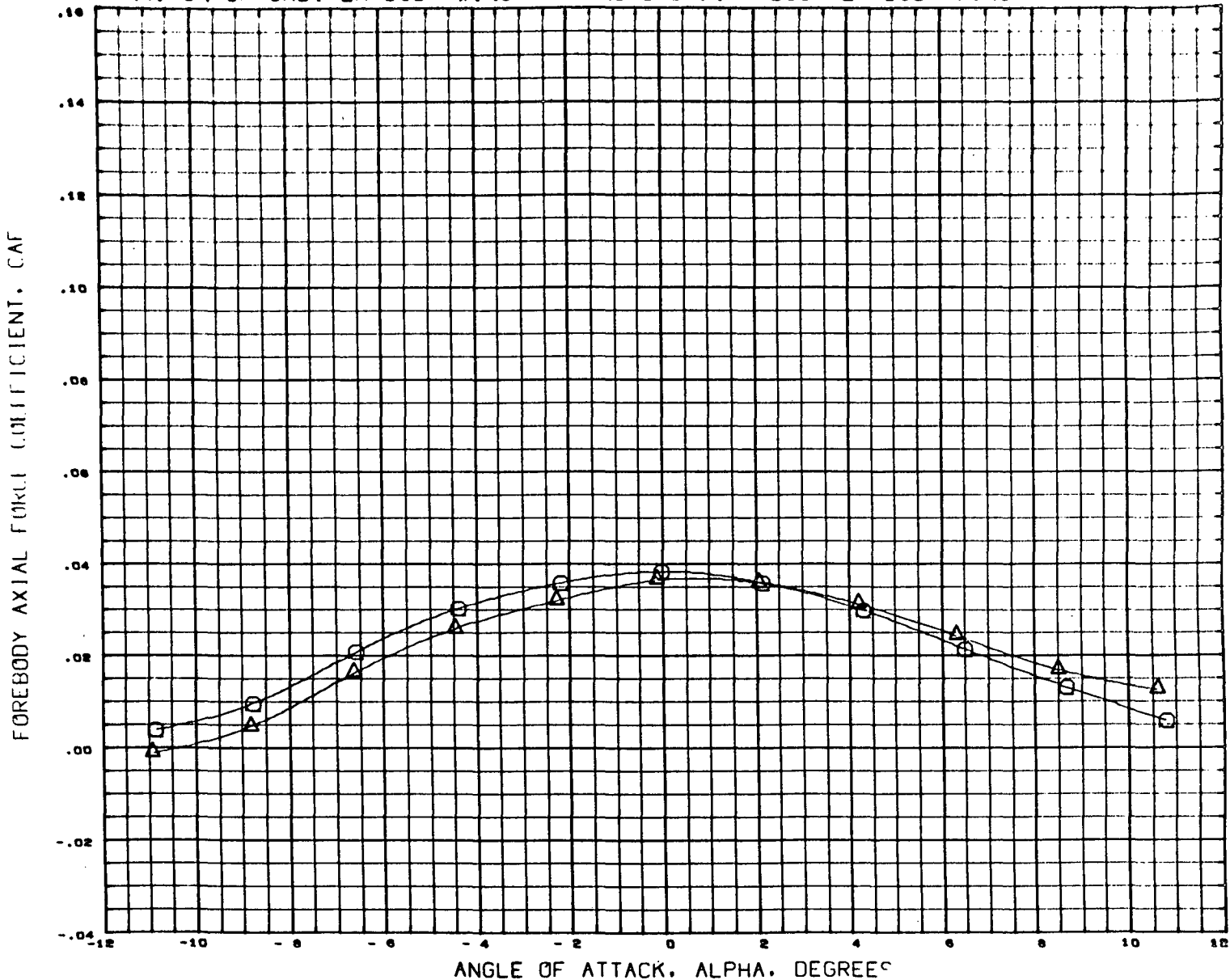
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0039 SCALE

MACH 1.959

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

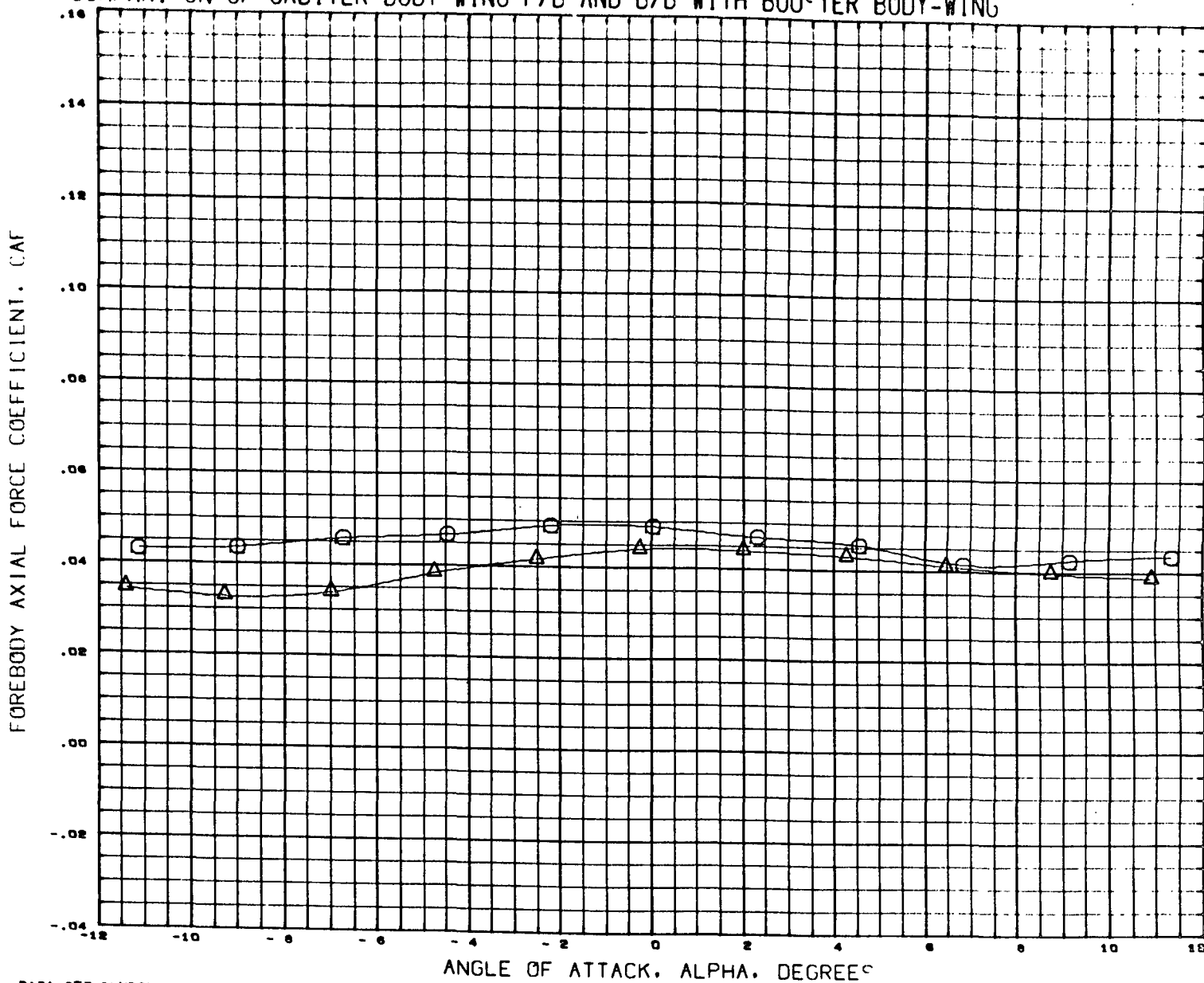


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B3W17 |
| (H3246A) | MSFC490 NR/GD LAUNCH B20W14+B3W17 |

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION |
|--------|--------|-------|--------|-----------------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF 15.6360 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 0.600

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

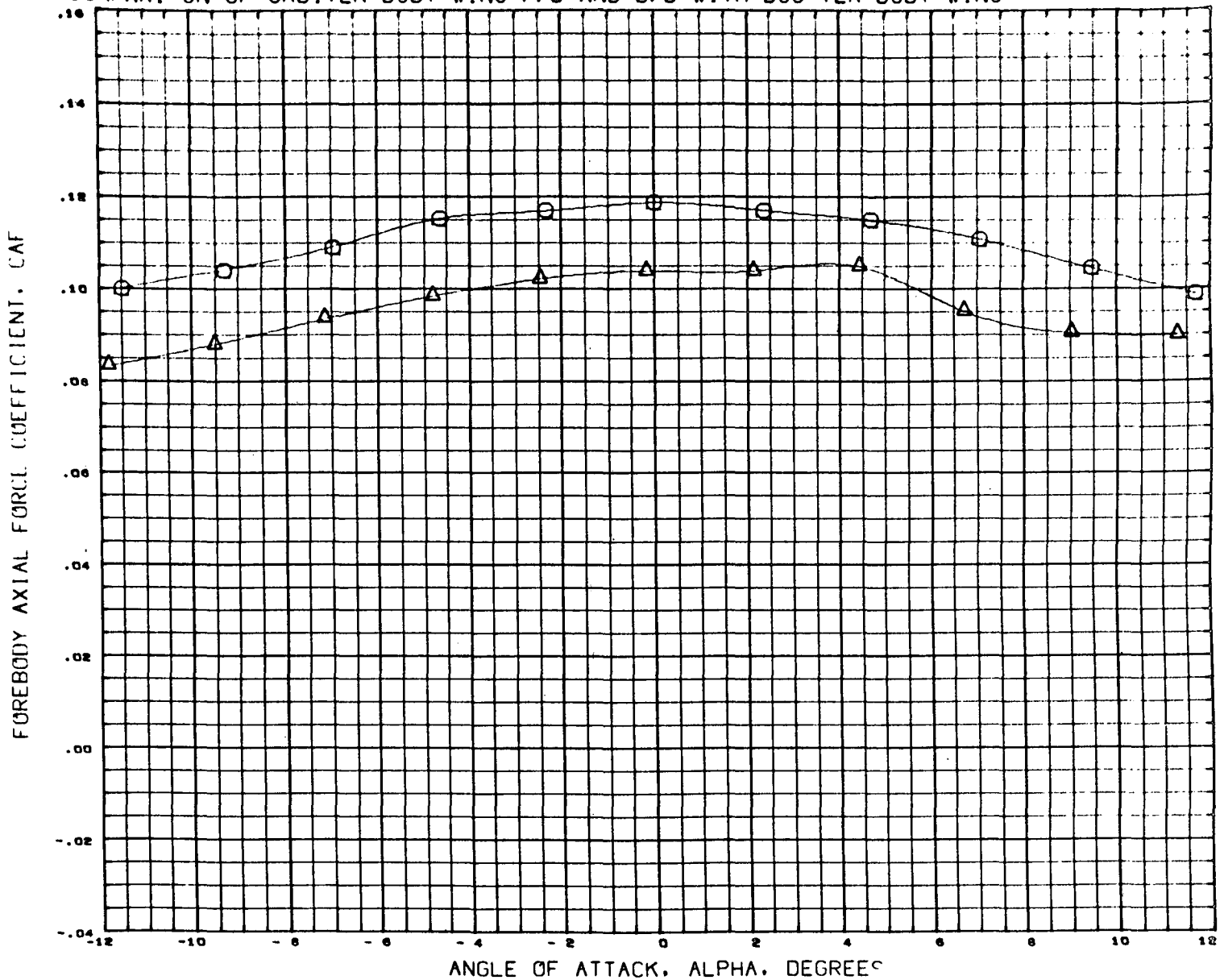


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRRP | 0.0000 |
| | | | | YMRRP | 0.0000 |
| | | | | ZMRRP | 0.0000 |
| | | | | SCALE | 0.0039 SCALE |

MACH 0.902

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

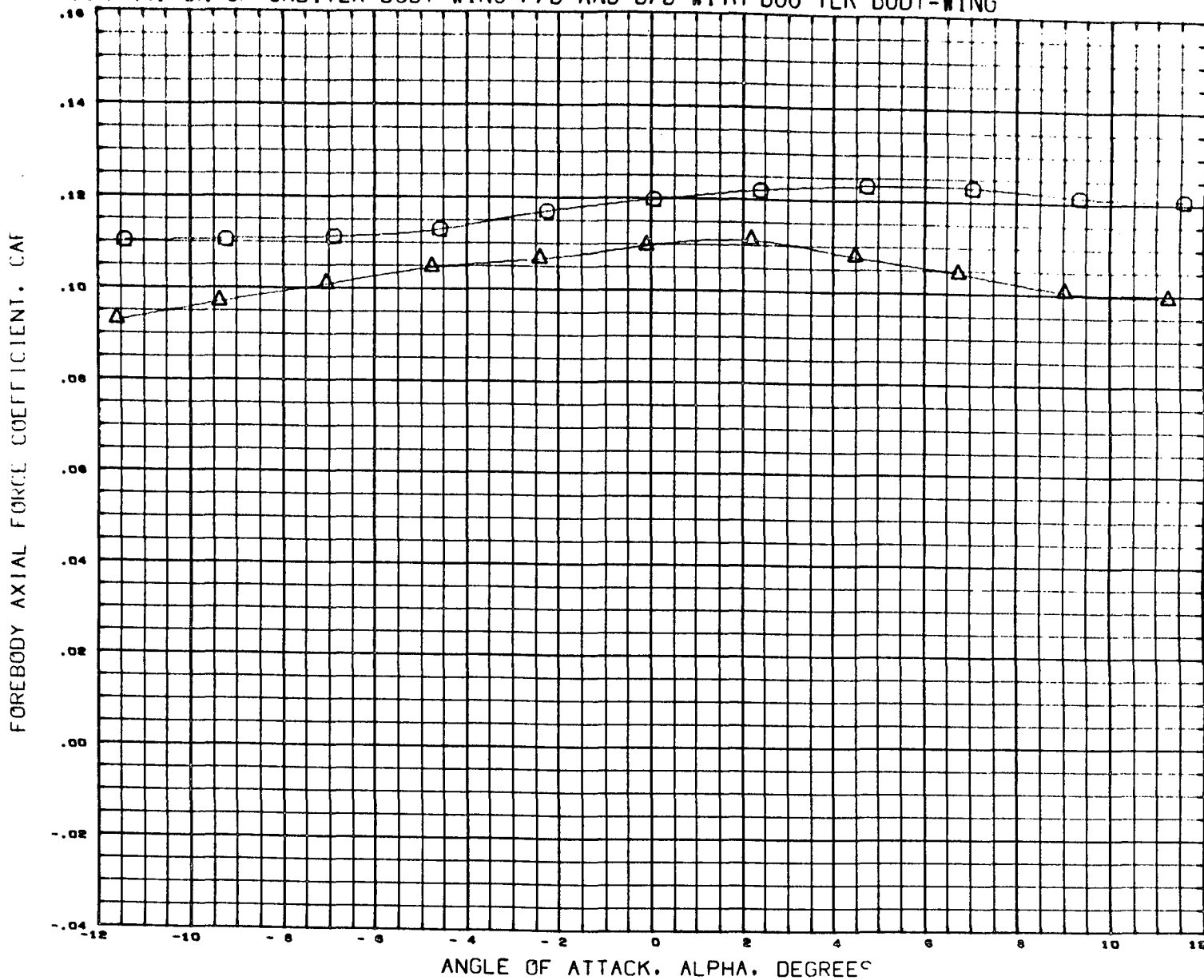


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0039 SCALE |

MACH 1.100

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

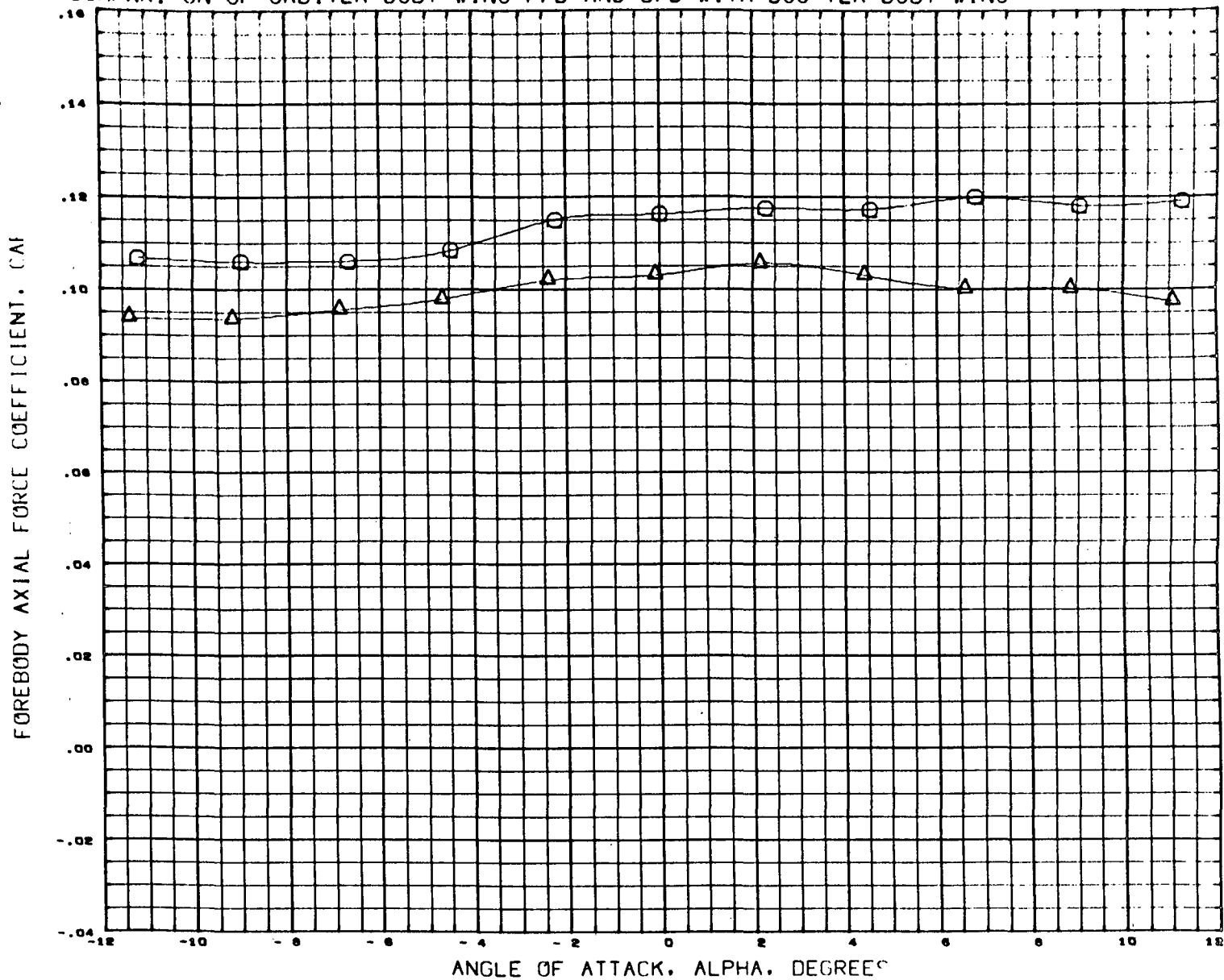


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.466

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

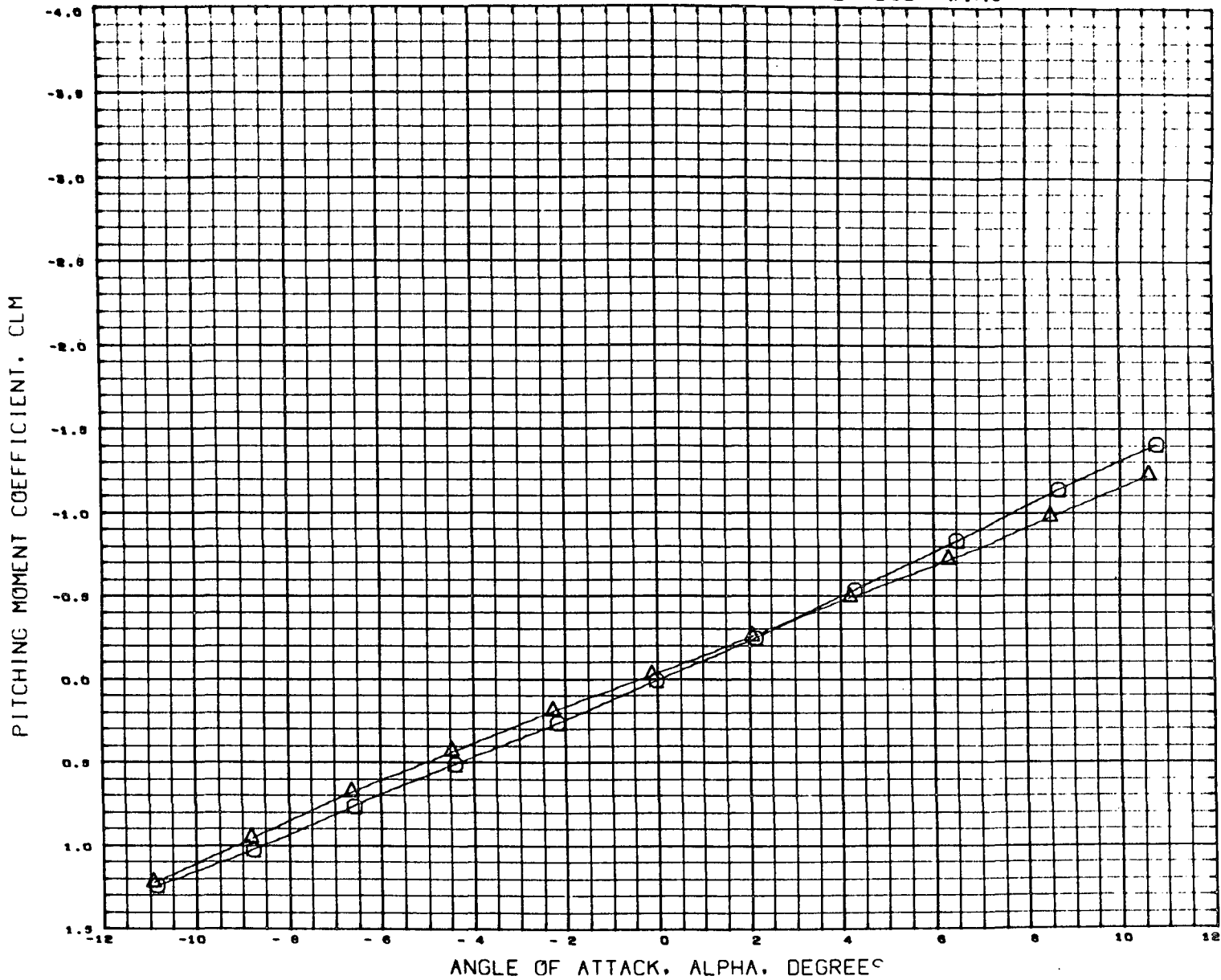


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.959

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



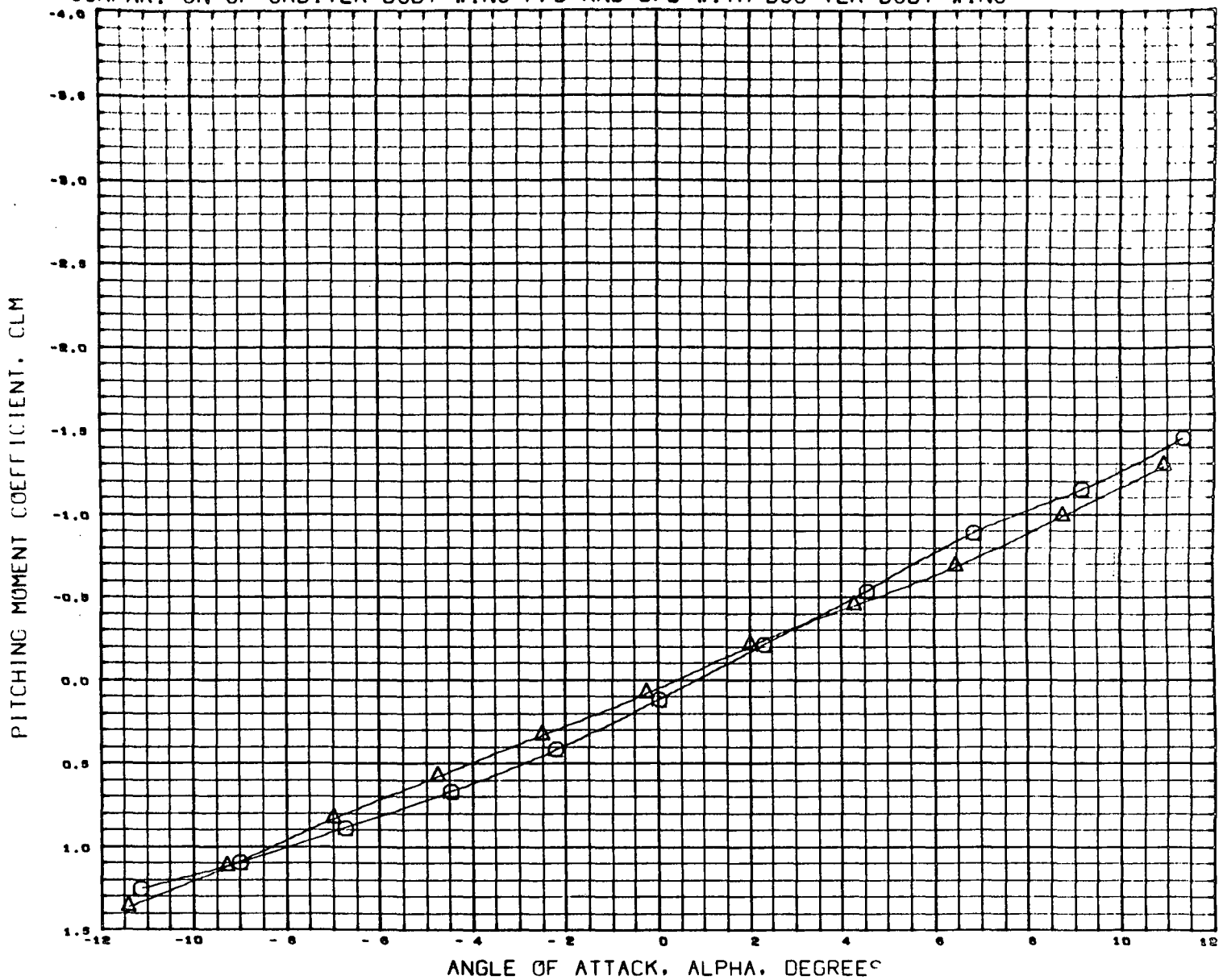
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (H3246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6360 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMHP | 0.0000 |
| YMHP | 0.0000 |
| ZMHP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.600

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

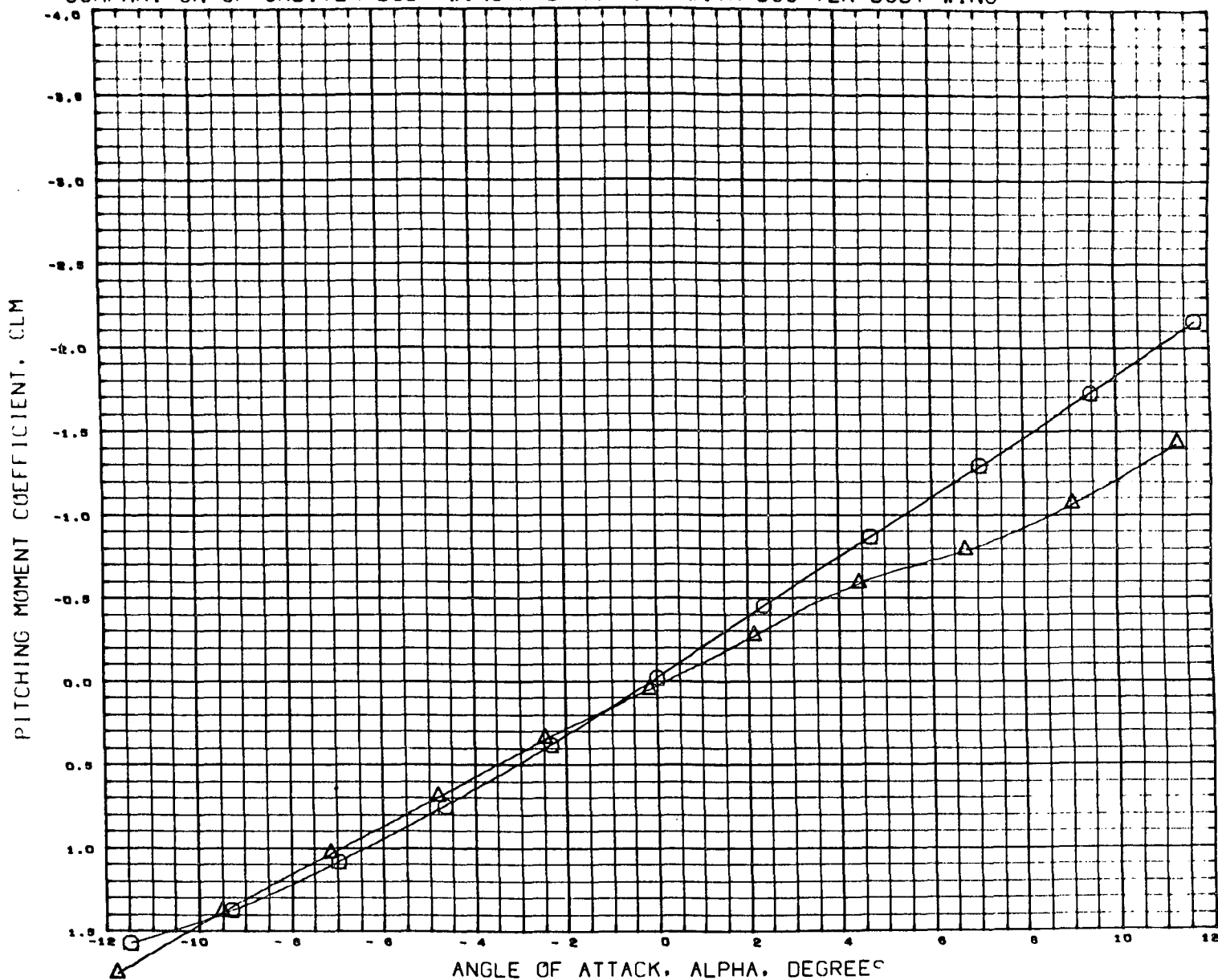


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3210A) | M3PC490 NR/GD LAUNCH B20W14+B3W17 |
| (H3246A) | M3PC490 NR/GD LAUNCH B20W14+B3W17 |

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION |
|--------|--------|-------|--------|-----------------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF 15.6580 30 IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF 3.0990 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0039 SCALE |

MACH 0.902

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



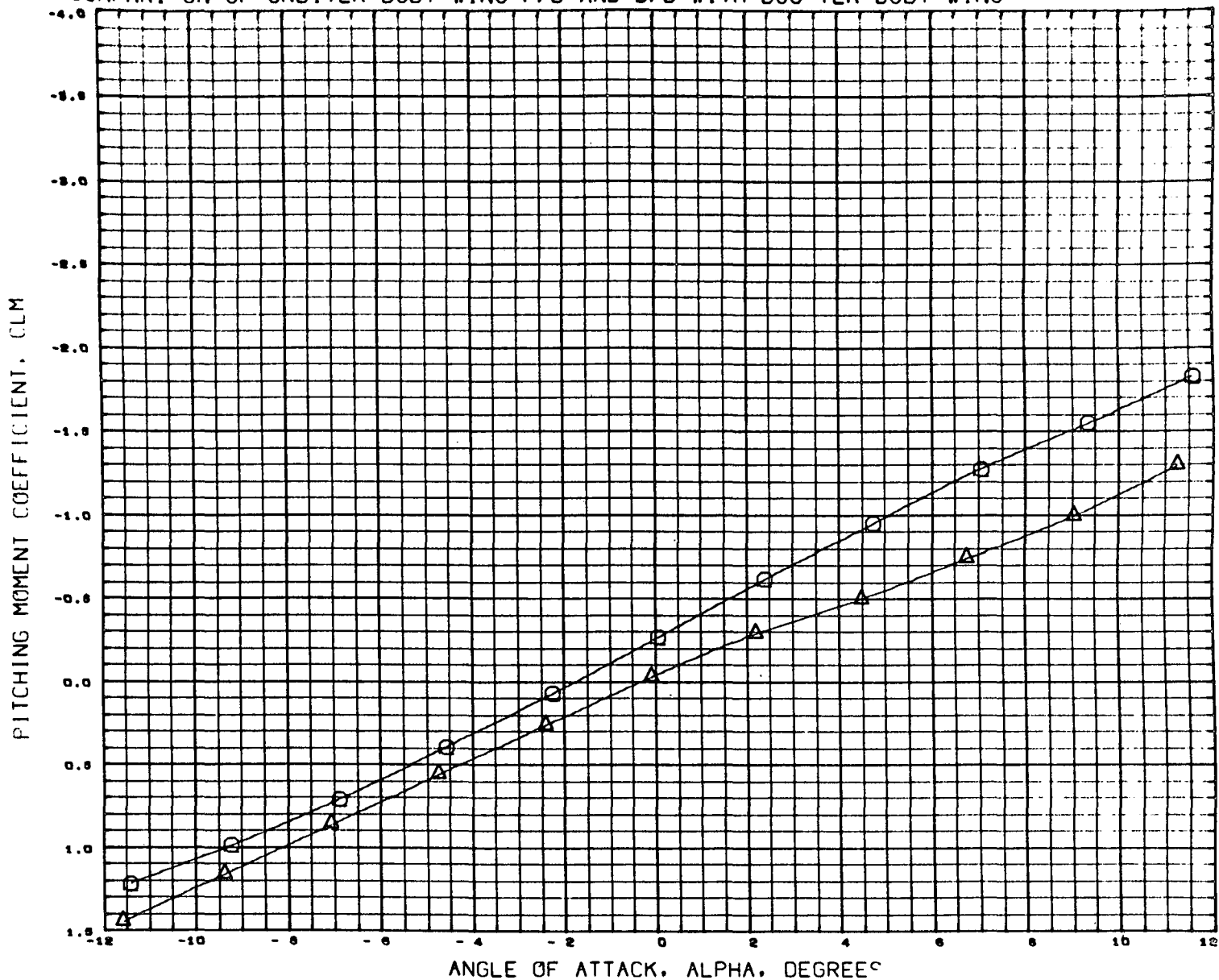
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17
 (H3240A) MSFC490 NR/GD LAUNCH B20W14+B3W17

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.100

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



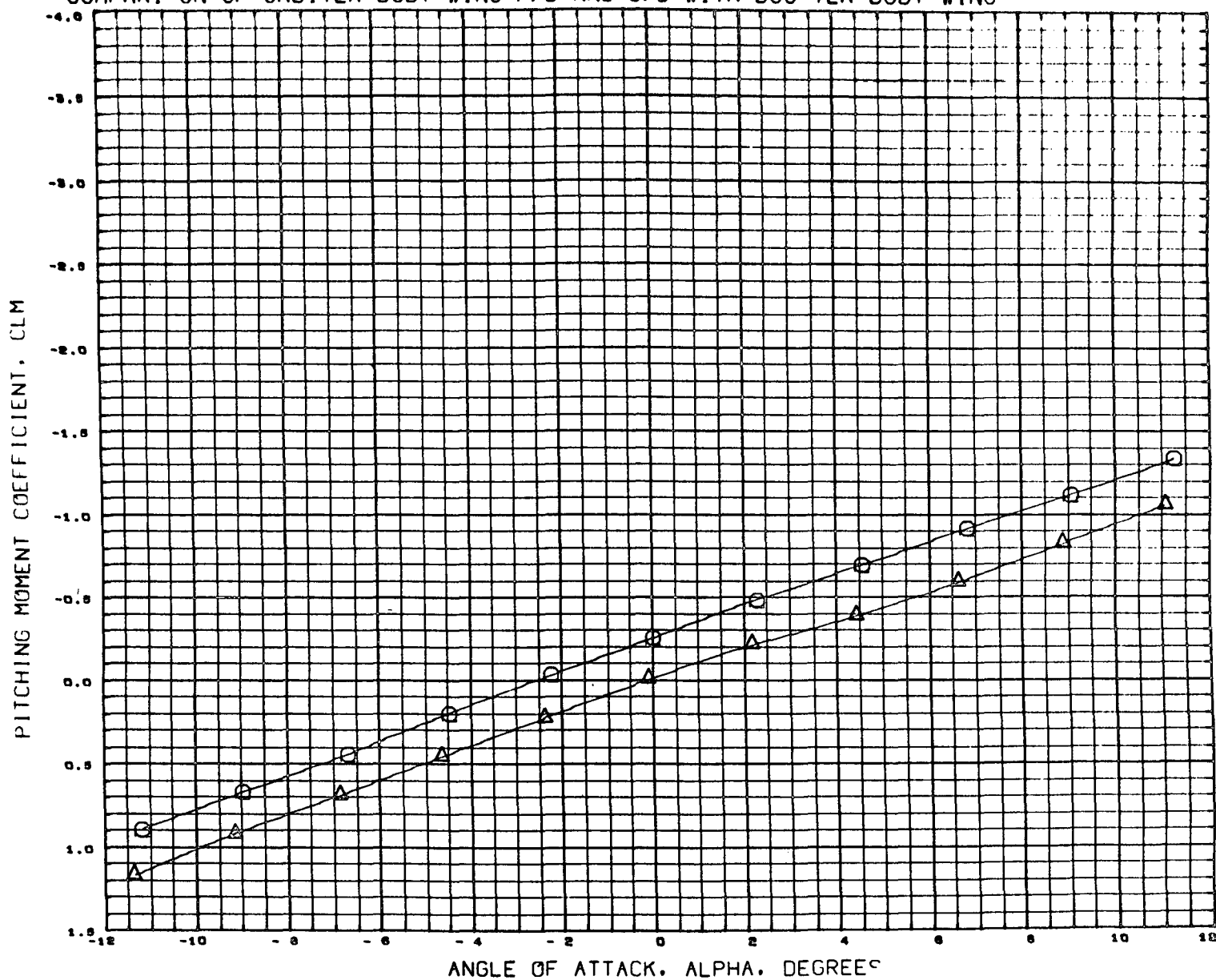
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.466

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

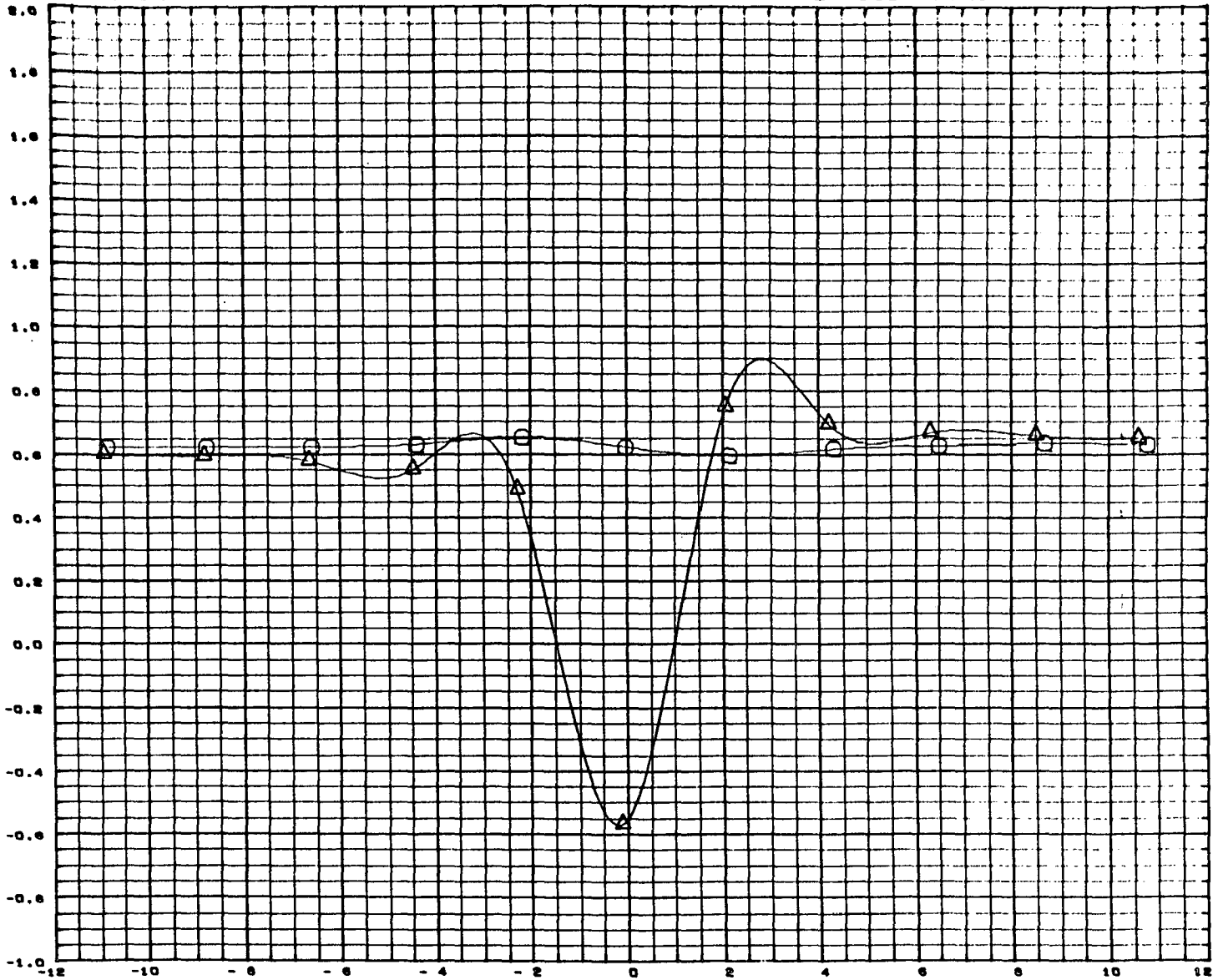
ORBINC POSITN BETA ELVATR
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 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0990 INCHES
 BREF 0.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0083 SCALE

MACH 1.950

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

CENTER OF PRESSURE REFERENCED TO BODY LENGTH. XCP/L



ANGLE OF ATTACK, ALPHA, DEGREE°

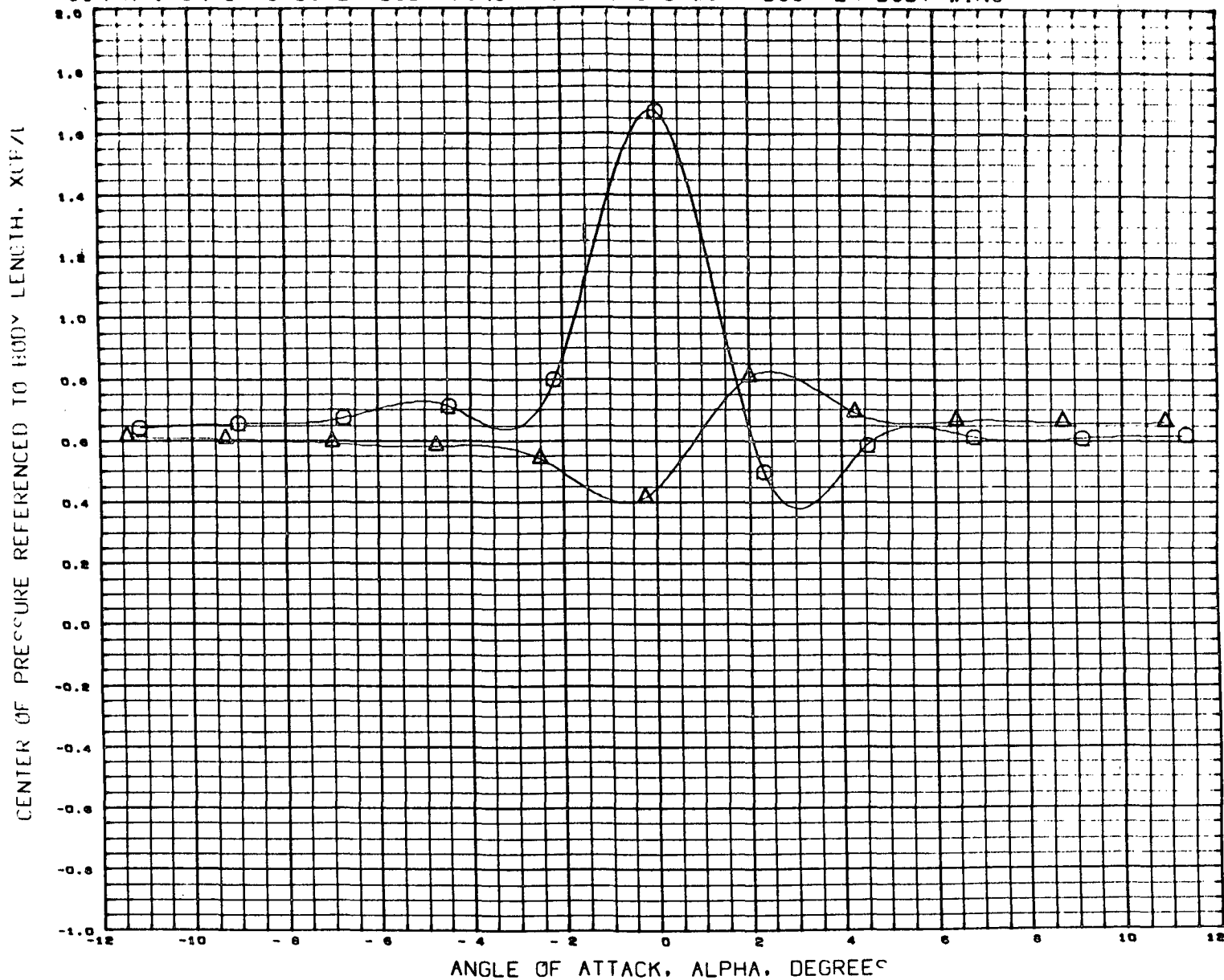
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17
 (H3240A) MSFC490 NR/GD LAUNCH B20W14+B3W17

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.600

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

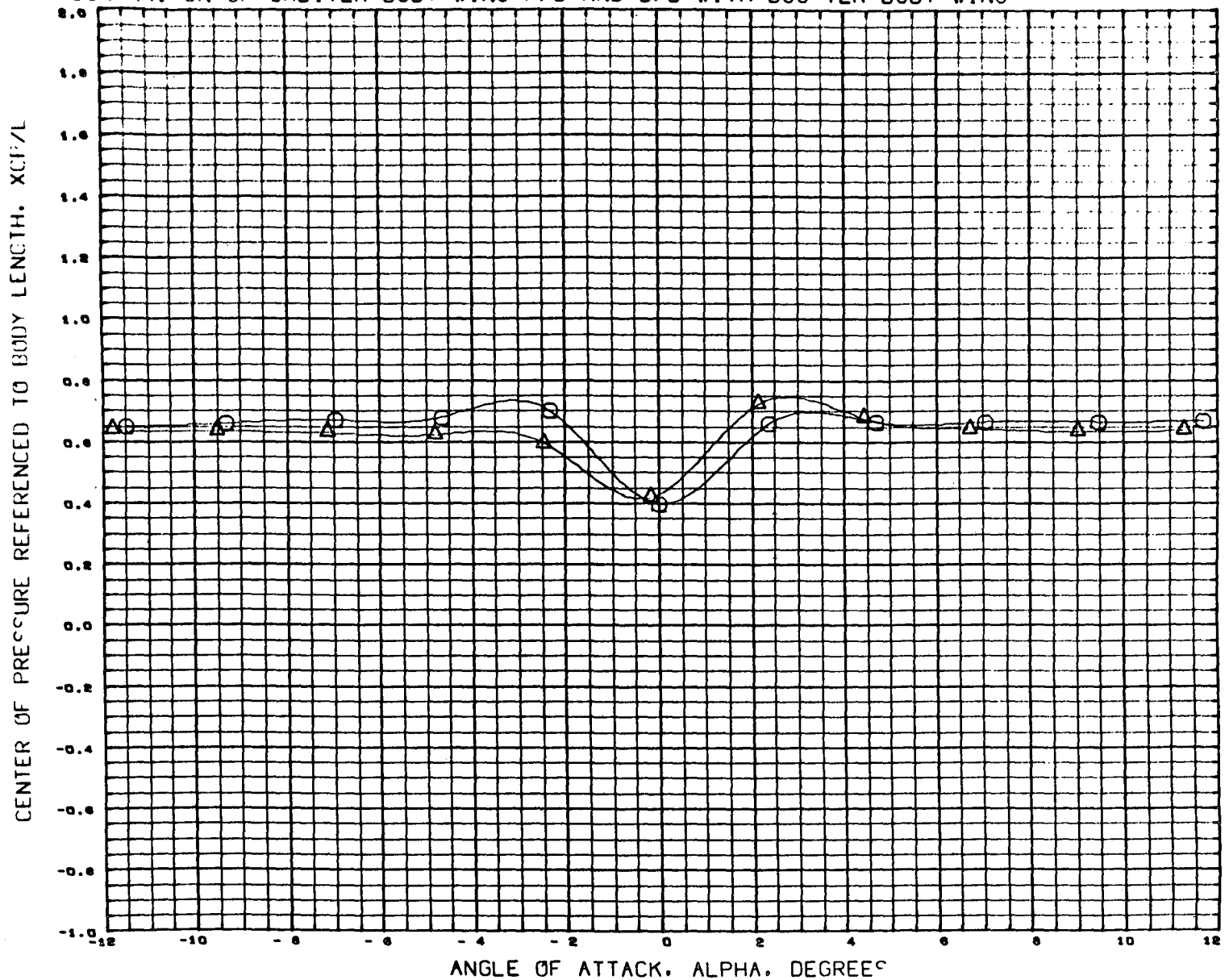


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0033 SCALE |

MACH 0.902

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

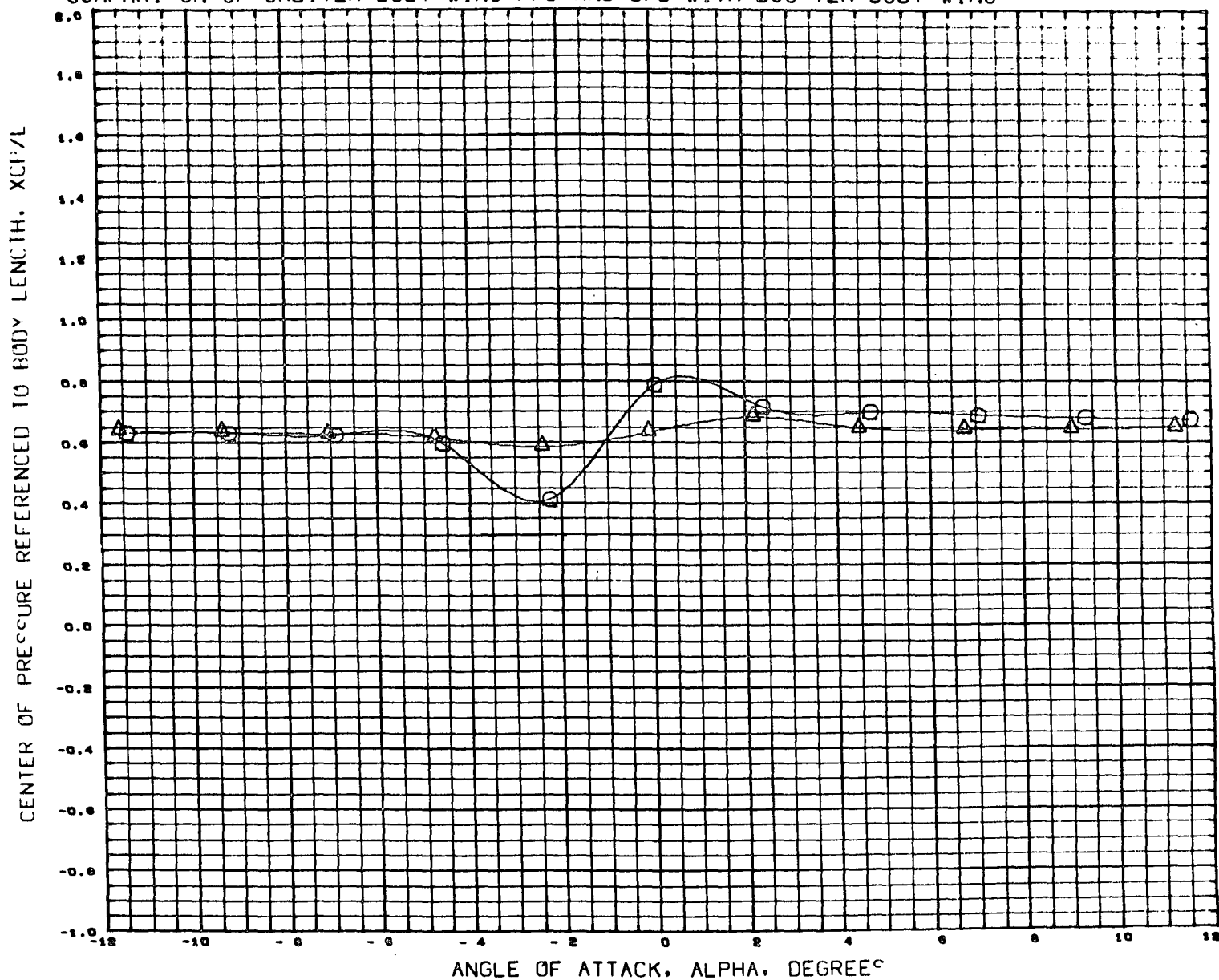


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) HSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3240A) HSFC490 NR/GD LAUNCH B20W14+B5W17

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.8560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMHP | 0.0000 |
| | | | | YMHP | 0.0000 |
| | | | | ZMHP | 0.0000 |
| | | | | SCALE | 0.0039 SCALE |

MACH 1.100

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



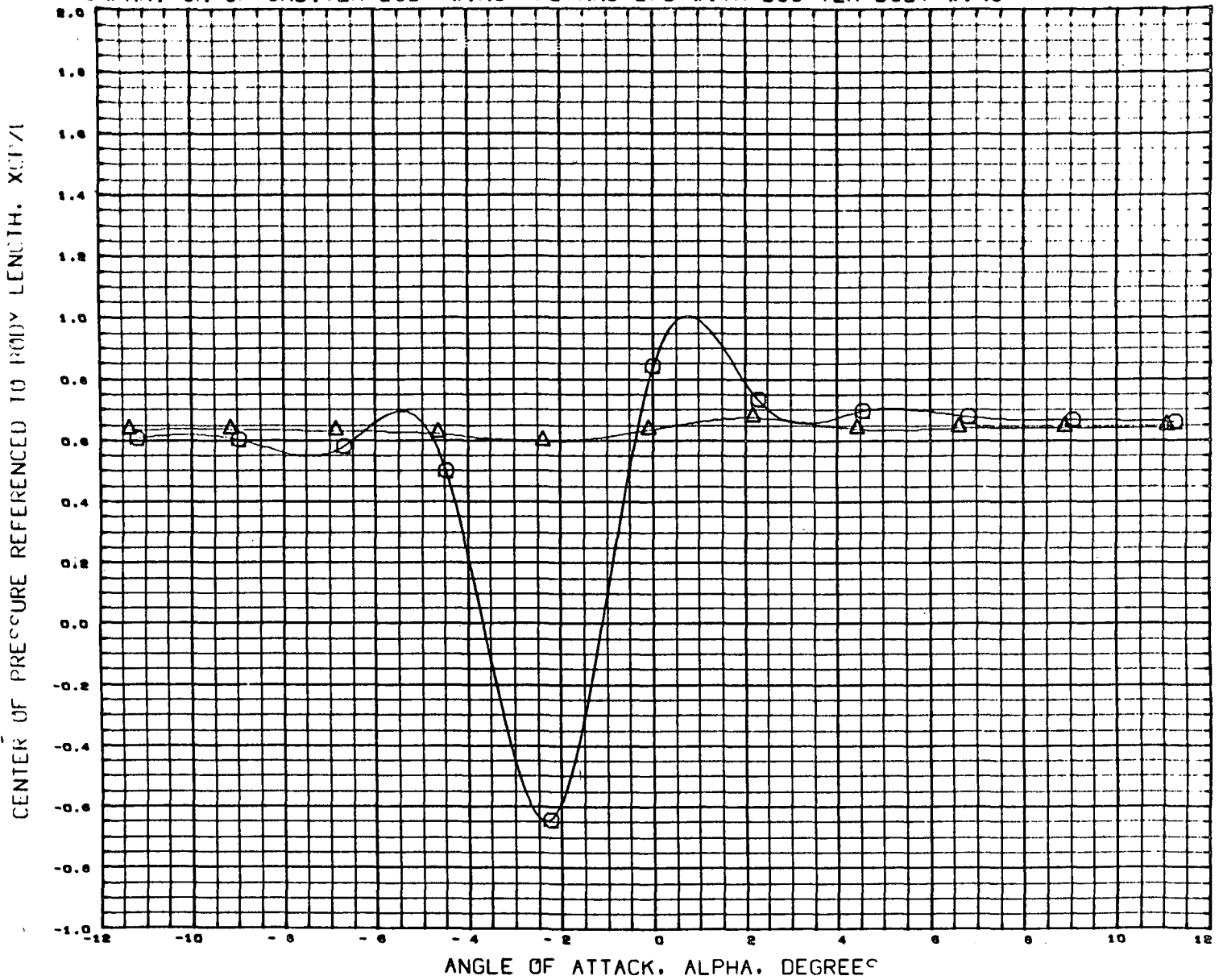
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) M8PC490 NR/GD LAUNCH 820W14+85W17
 (H3246A) M8PC490 NR/GD LAUNCH 820W14+85W17

| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 19.6360 | 50 IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0950 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.466

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



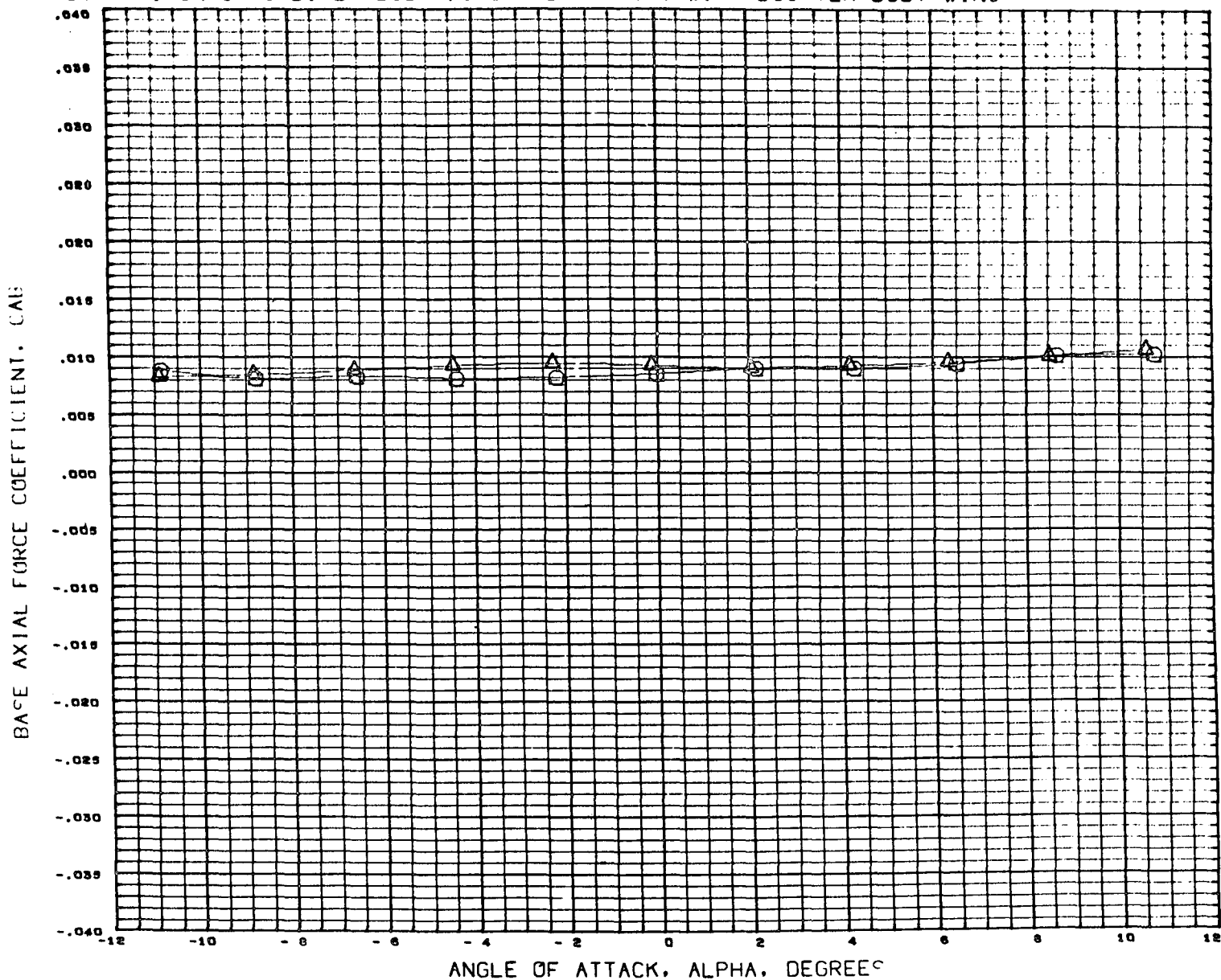
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 19.6560 SQ IN
 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0033 SCALE

MACH 1.939

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.000

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



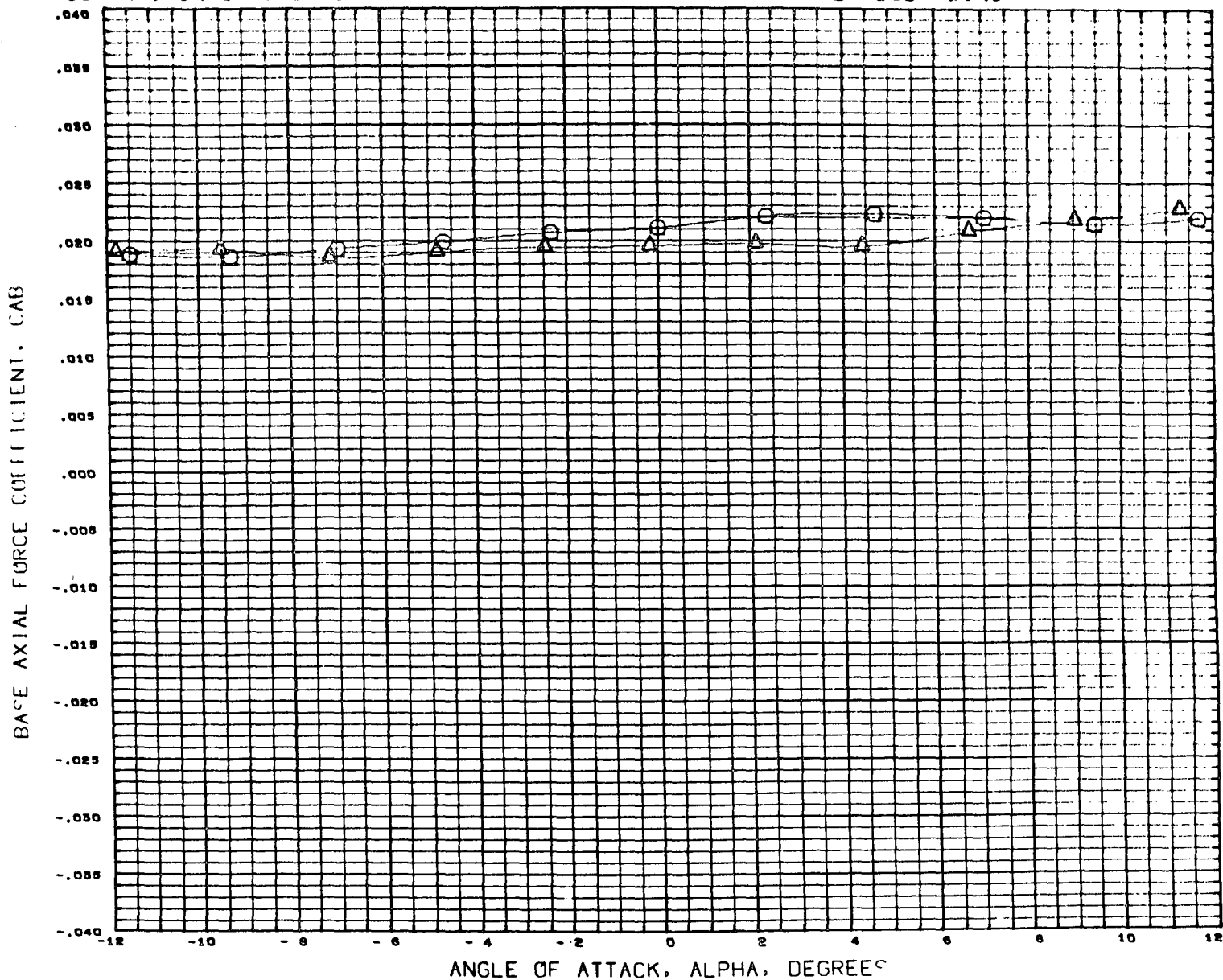
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

ORBINC POSITN BETA ELVATR
 0.000 1.000 0.000 0.000
 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.902

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17
 (H3246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0930 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0039 SCALE |

MACH 1.100

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3240A) MSFC490 NR/GD LAUNCH B20W14+B5W17

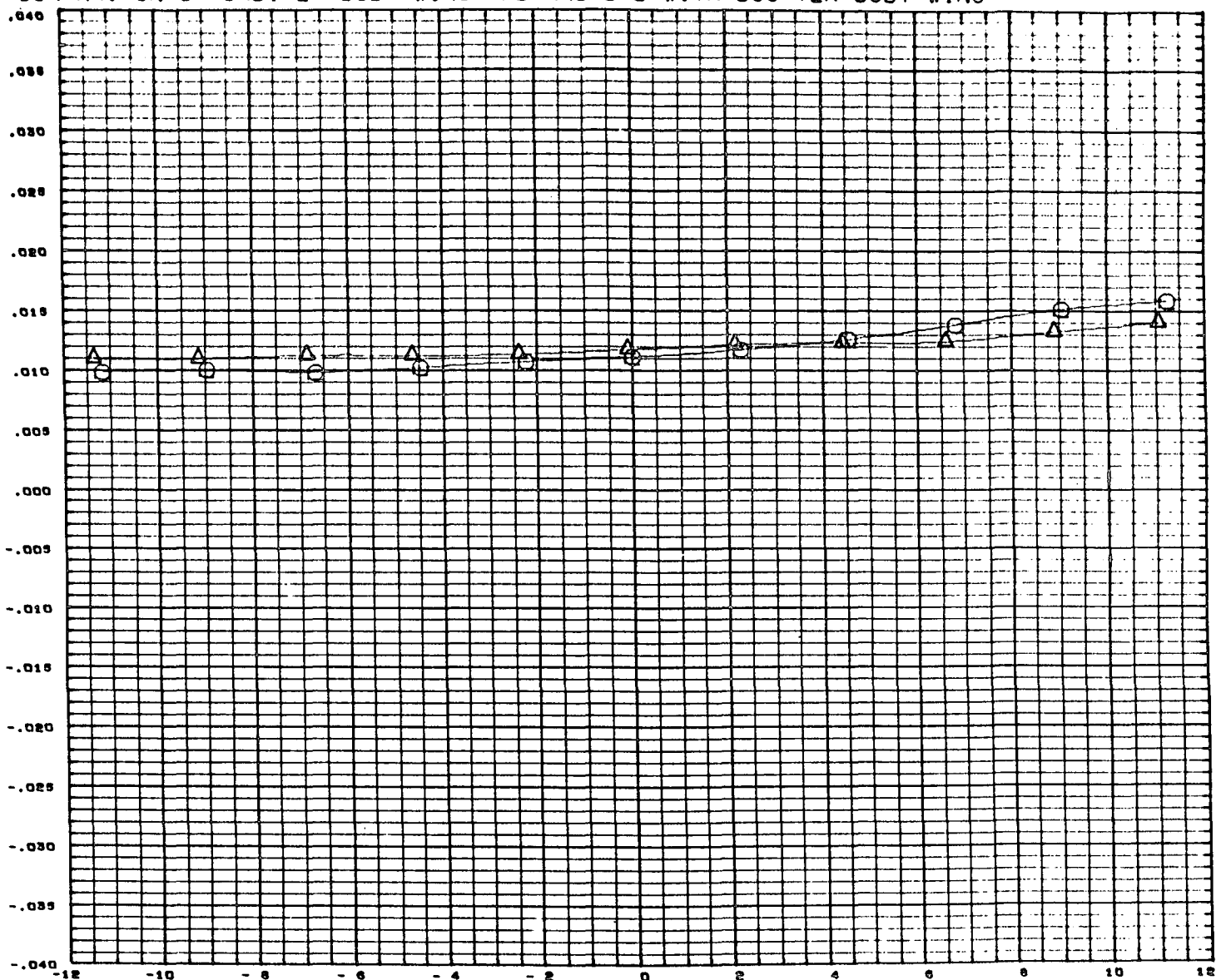
ORBIT INC POSITN BETA ELVATR
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 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6960 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0950 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0039 SCALE

MACH 1.466

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

BASE AXIAL FORCE COEFFICIENT, C_{AB}



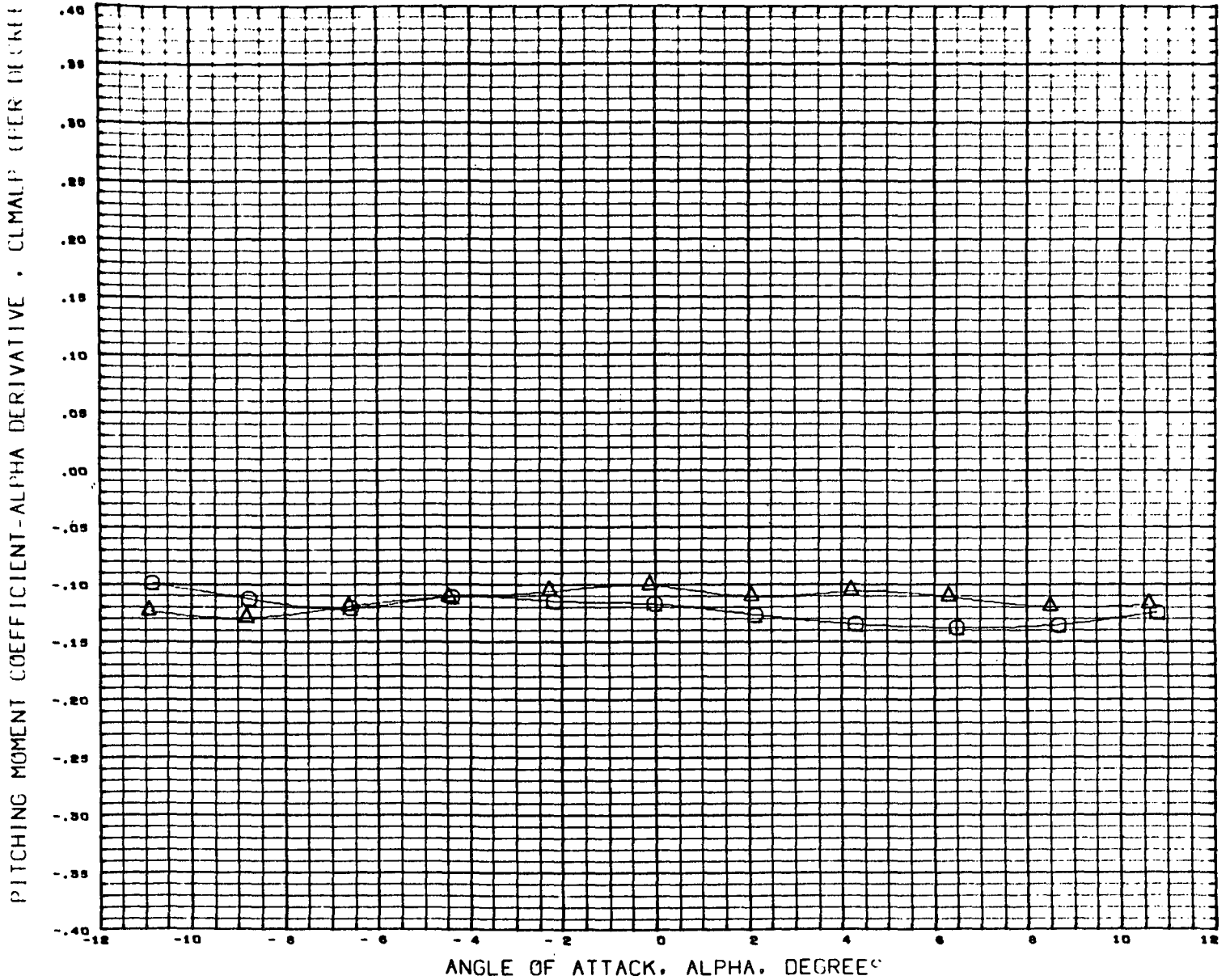
ANGLE OF ATTACK, ALPHA, DEGREE

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (H3210A) | MSFC490 NR/GD LAUNCH B20W14+B3W17 |
| (H3246A) | MSFC490 NR/GD LAUNCH B20W14+B3W17 |

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.059

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

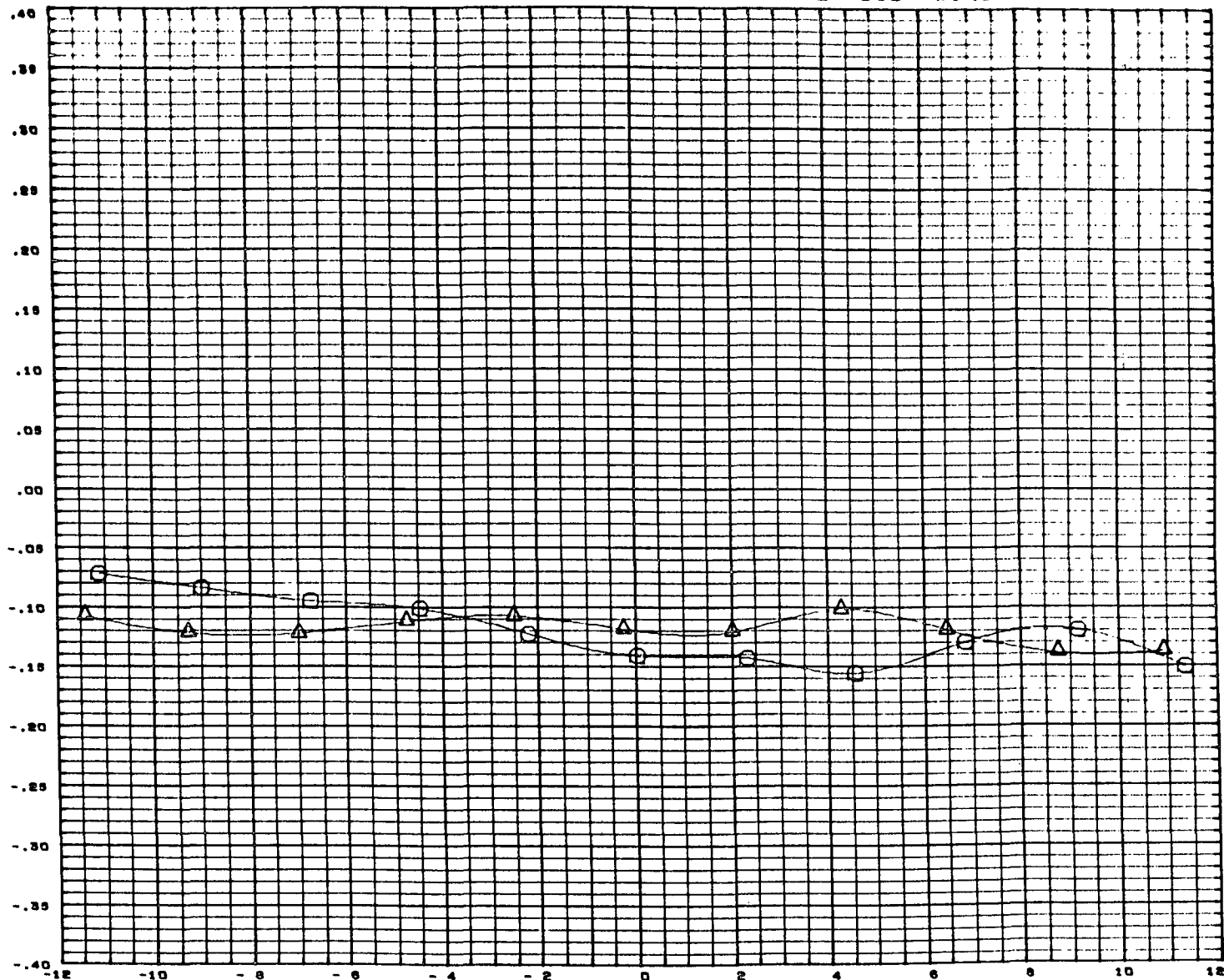


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|-----------------|-----------------------------------|--------|--------|-------|--------|-----------------------|---------------|
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 | 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (13246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 | 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.600

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAY (PER PERCENT)

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



ANGLE OF ATTACK, ALPHA, DEGREE°

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(13210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
(13246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

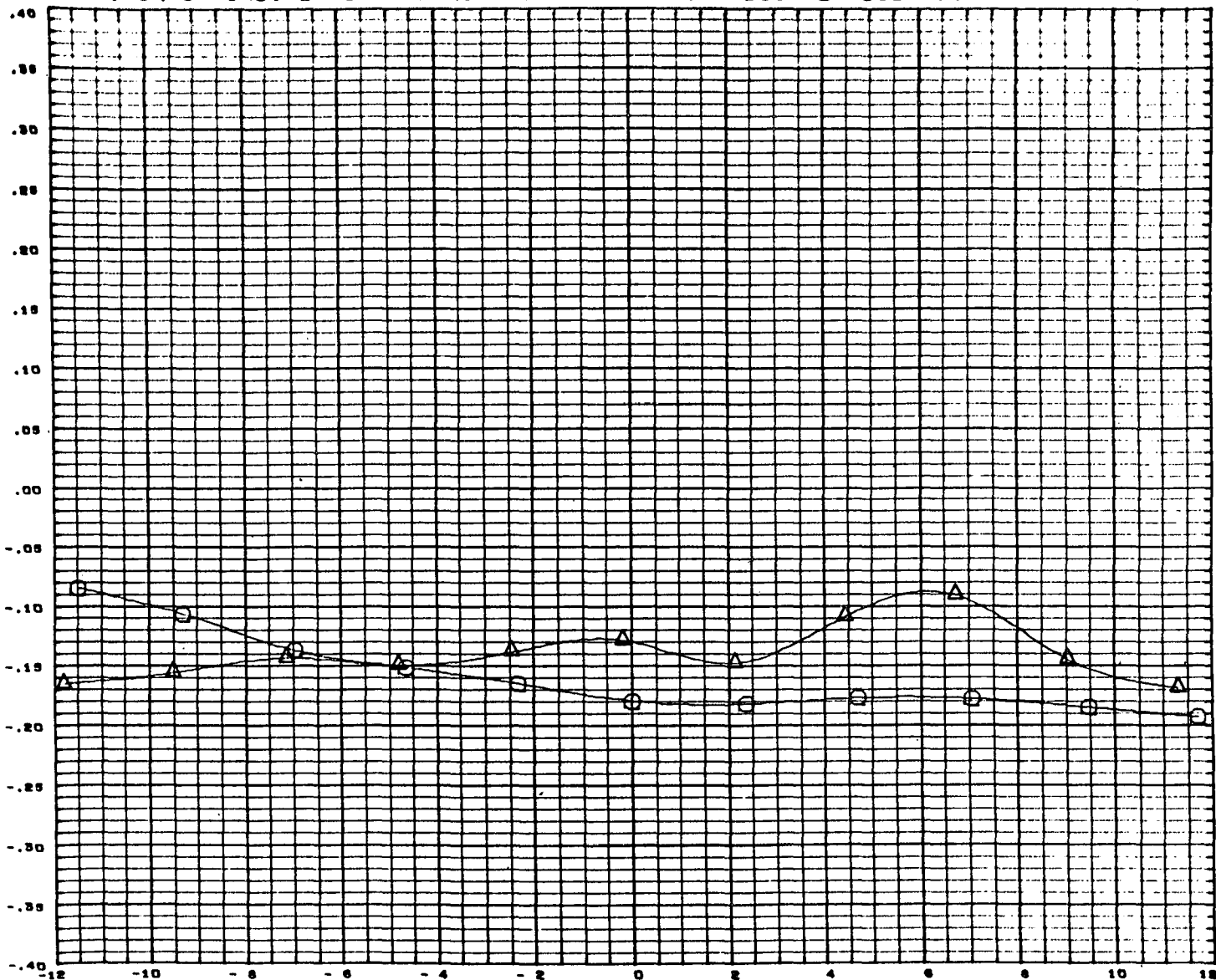
| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.902

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLM_{AP} (PER DEGREE)

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



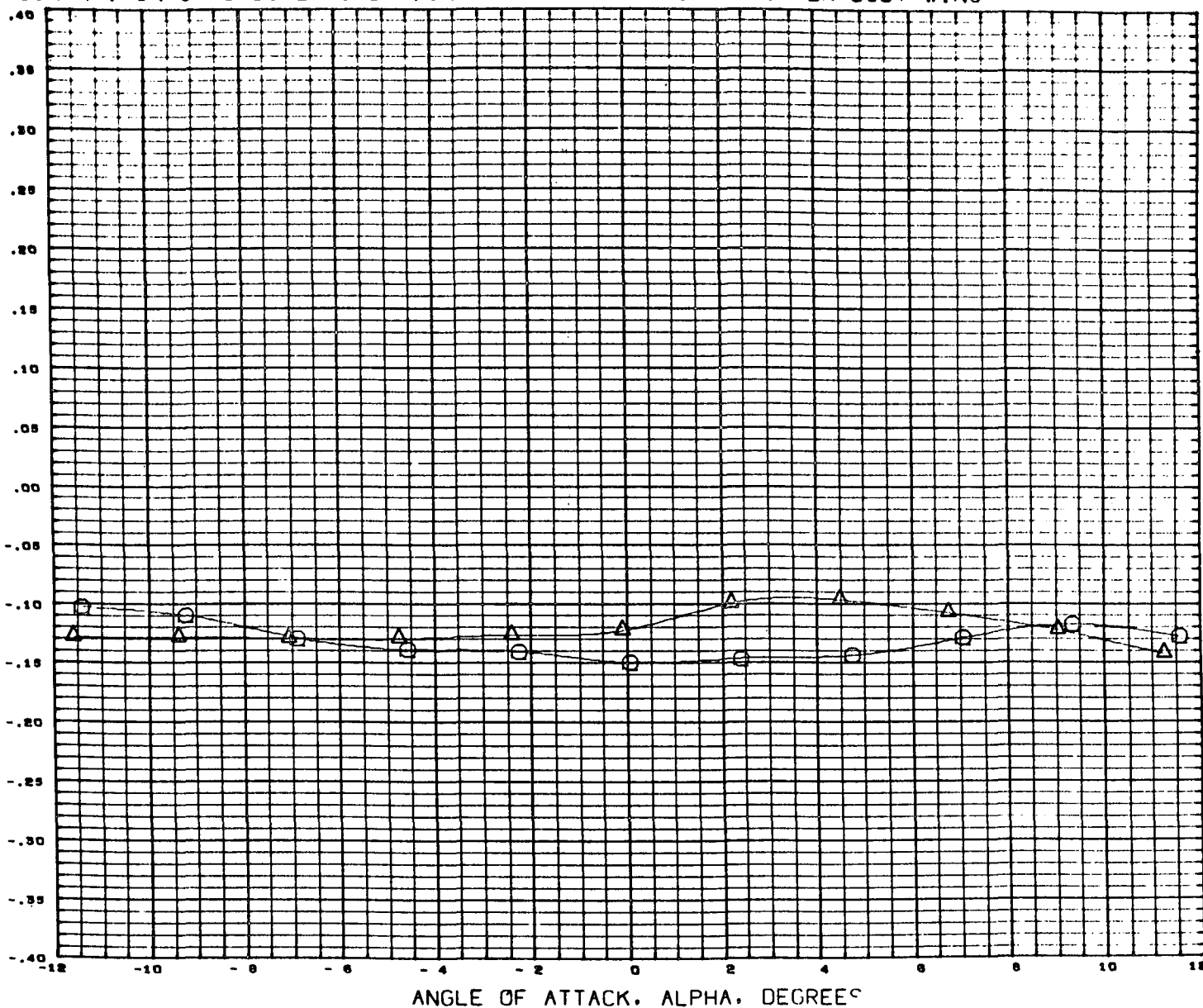
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (13246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

| ORBIT | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|-------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 13.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.100

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAMP (PER DEGREE)

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



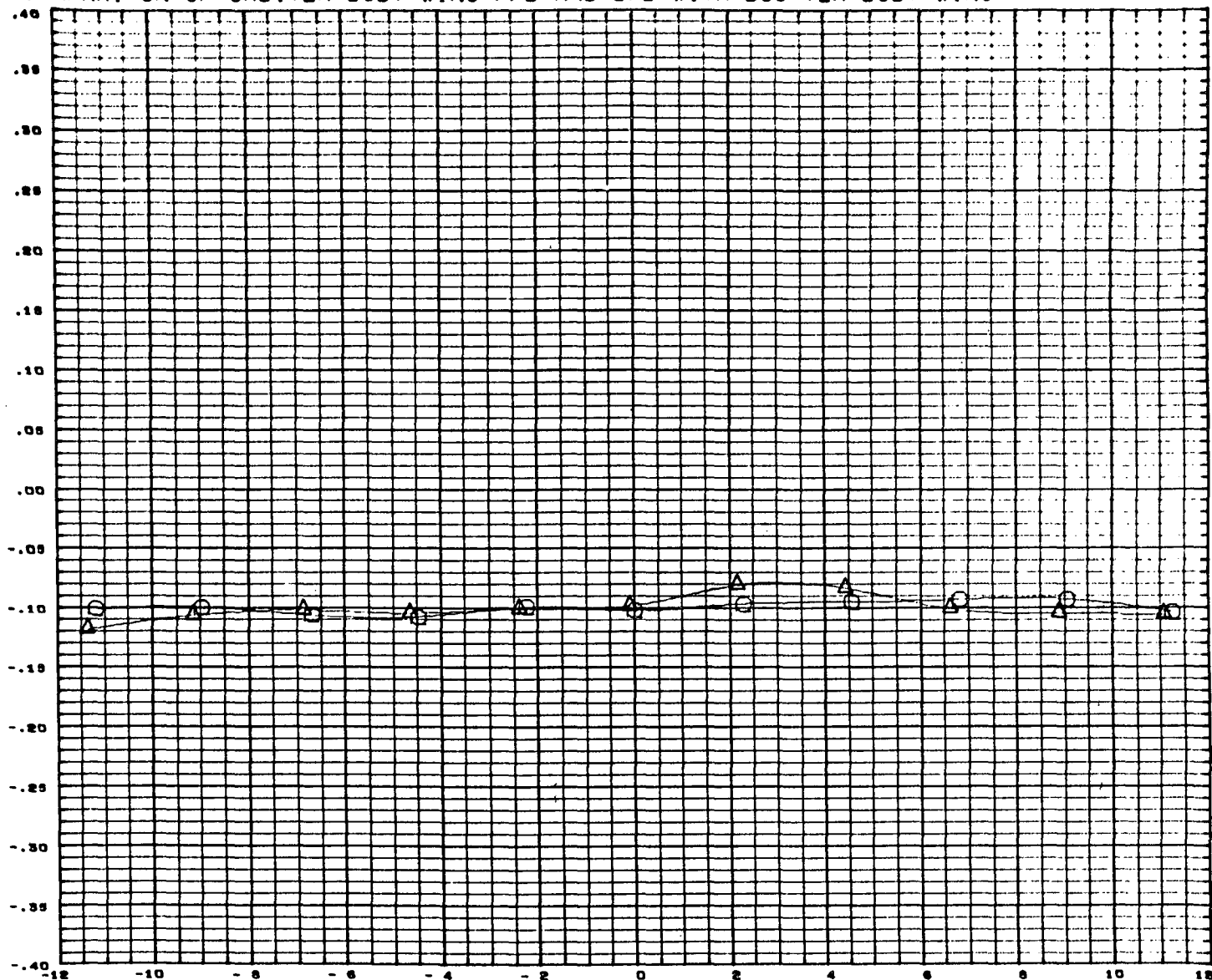
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (13246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
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| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0039 SCALE |

MACH 1.468

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMAY (PER DEGREE)

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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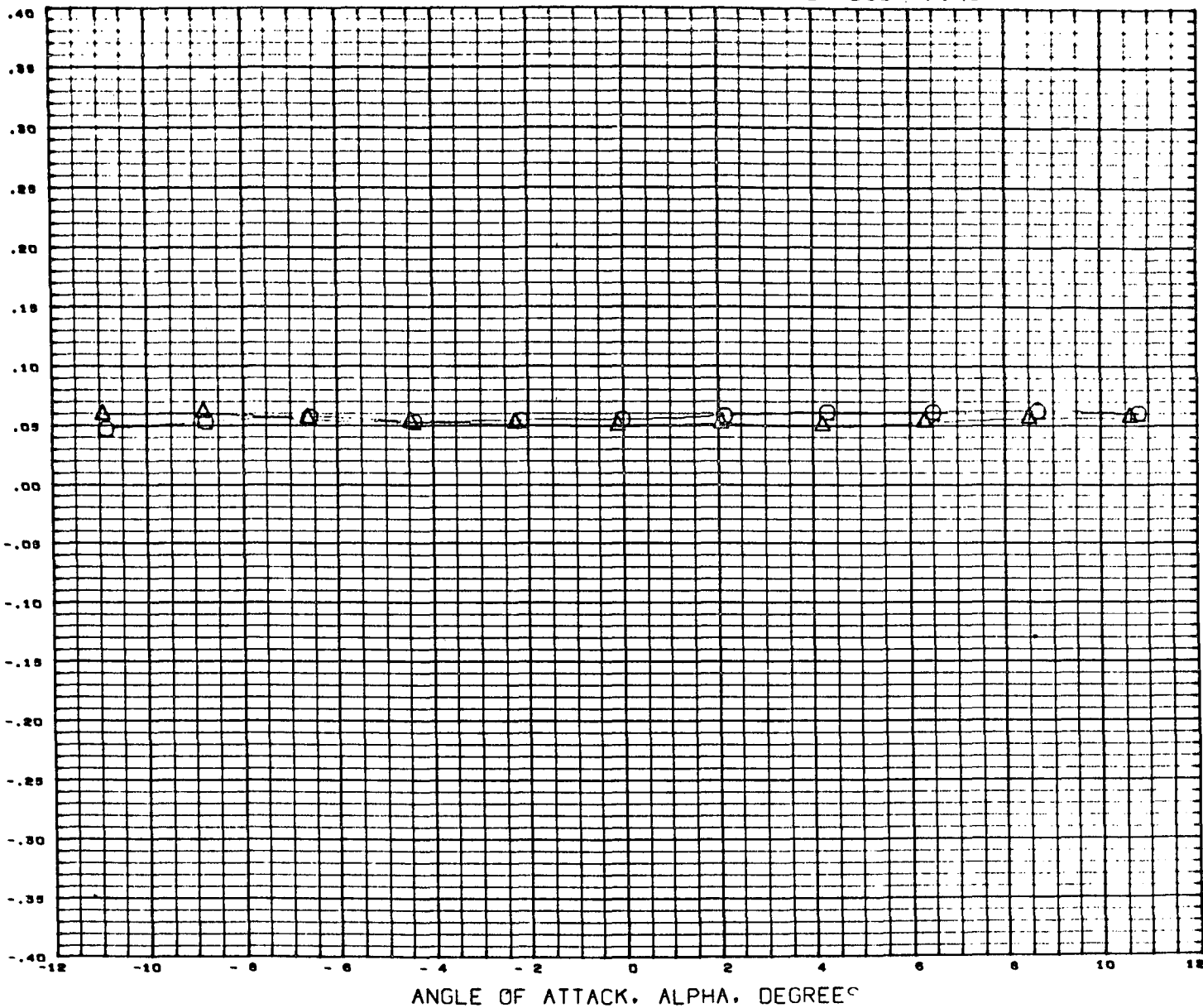
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 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6960 SQ IN
 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.959

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (13210A) | MSFC490 NR/GD LAUNCH B20W14+B3W17 |
| (13246A) | MSFC490 NR/GD LAUNCH B20W14+B3W17 |

| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.0560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRF | 0.0000 |
| YMRF | 0.0000 |
| ZMRF | 0.0000 |
| SCALE | 0.0033 SCALE |

MACH 0.600

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (13246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

ORBINC POSITN BETA ELVATR
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 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRF 0.0000
 YMRF 0.0000
 ZMRF 0.0000
 SCALE 0.0035 SCALE

MACH 0.902

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, (N/ALPHA) (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (13246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

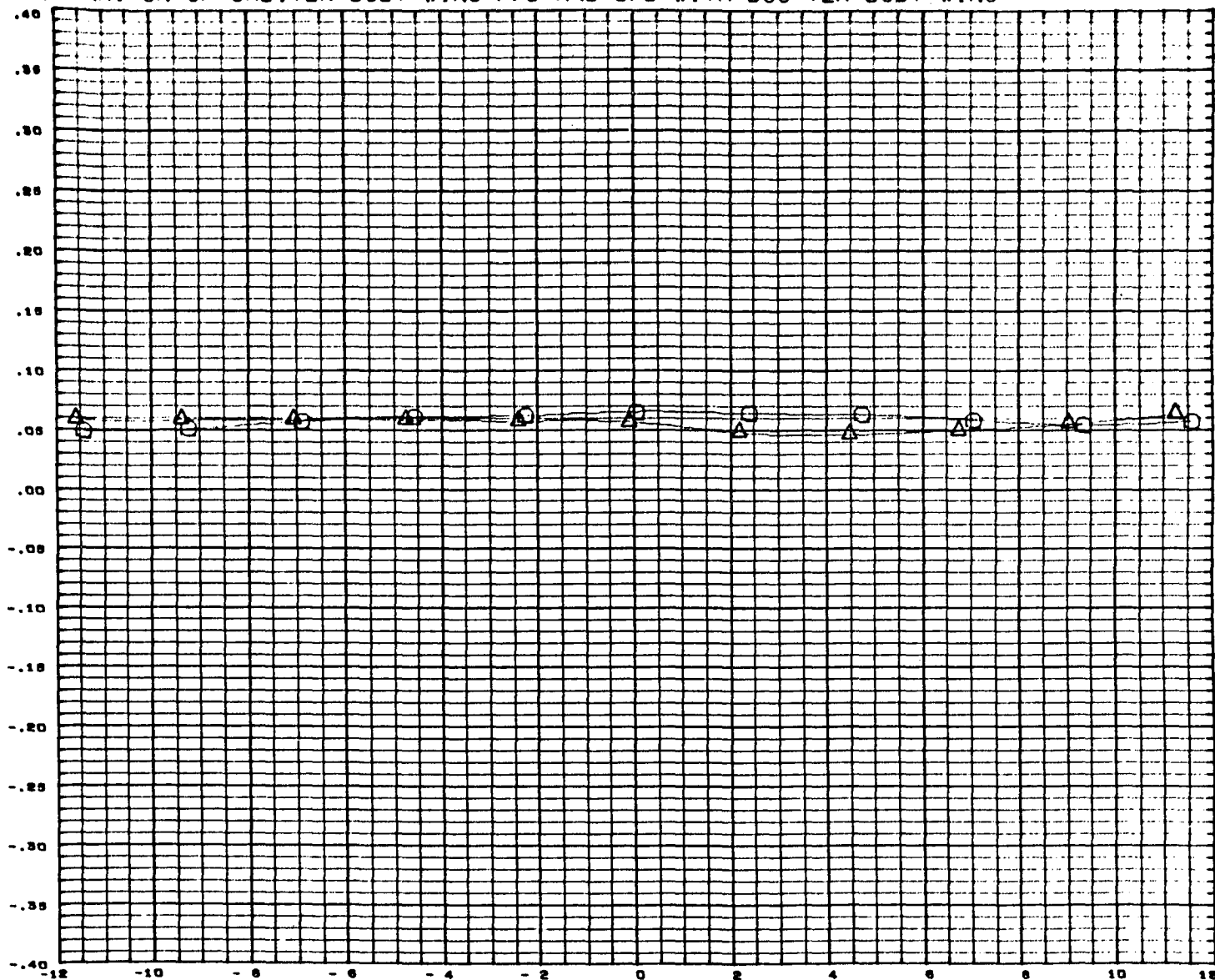
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 0.000 4.000 0.000 0.000

REFERENCE INFORMATION
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 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0033 SCALE

MACH 1.100

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREE

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
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| (13246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

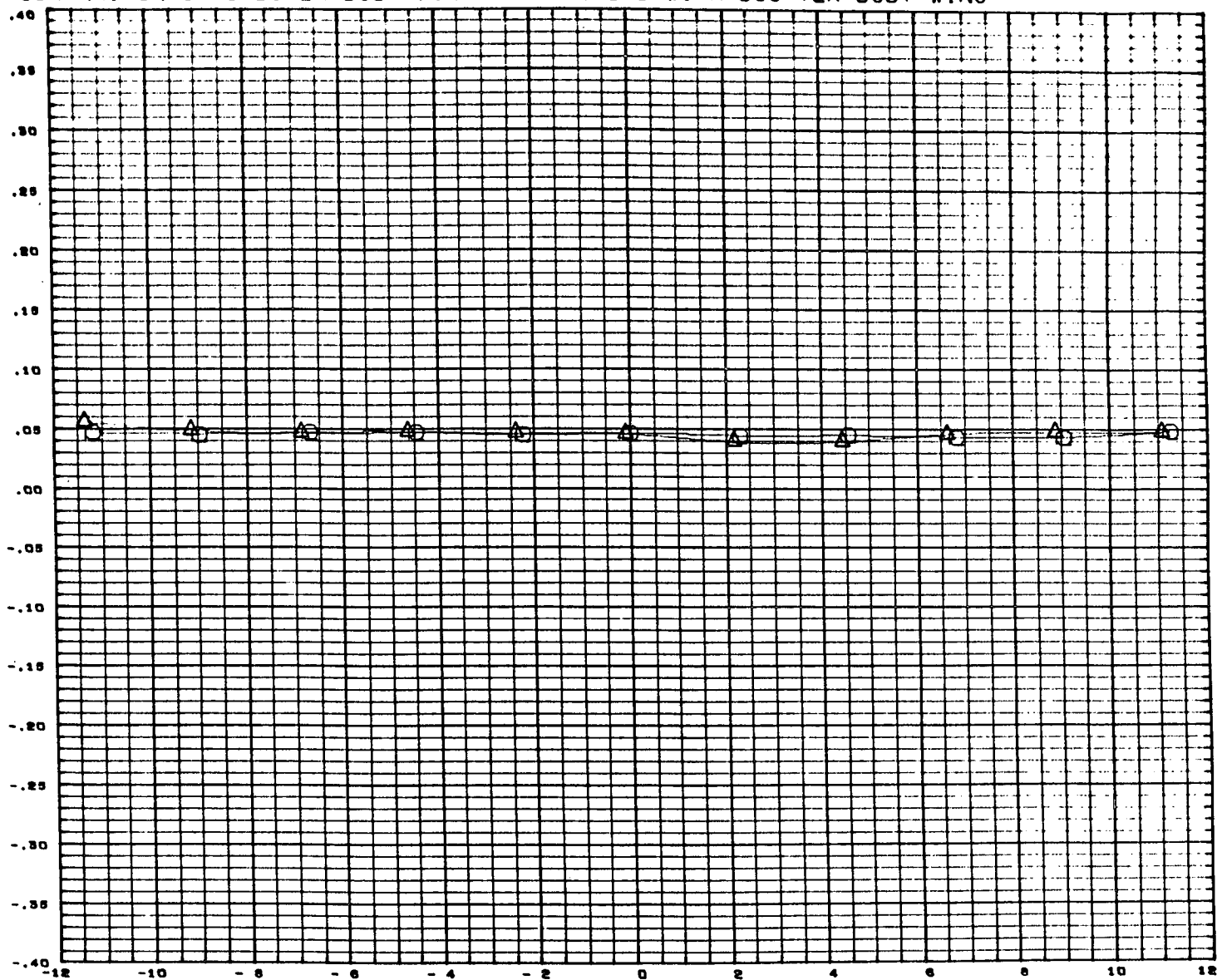
| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
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| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
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| SREF | 15.6560 SQ IN |
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| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.468

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPH (PER DEGREE)



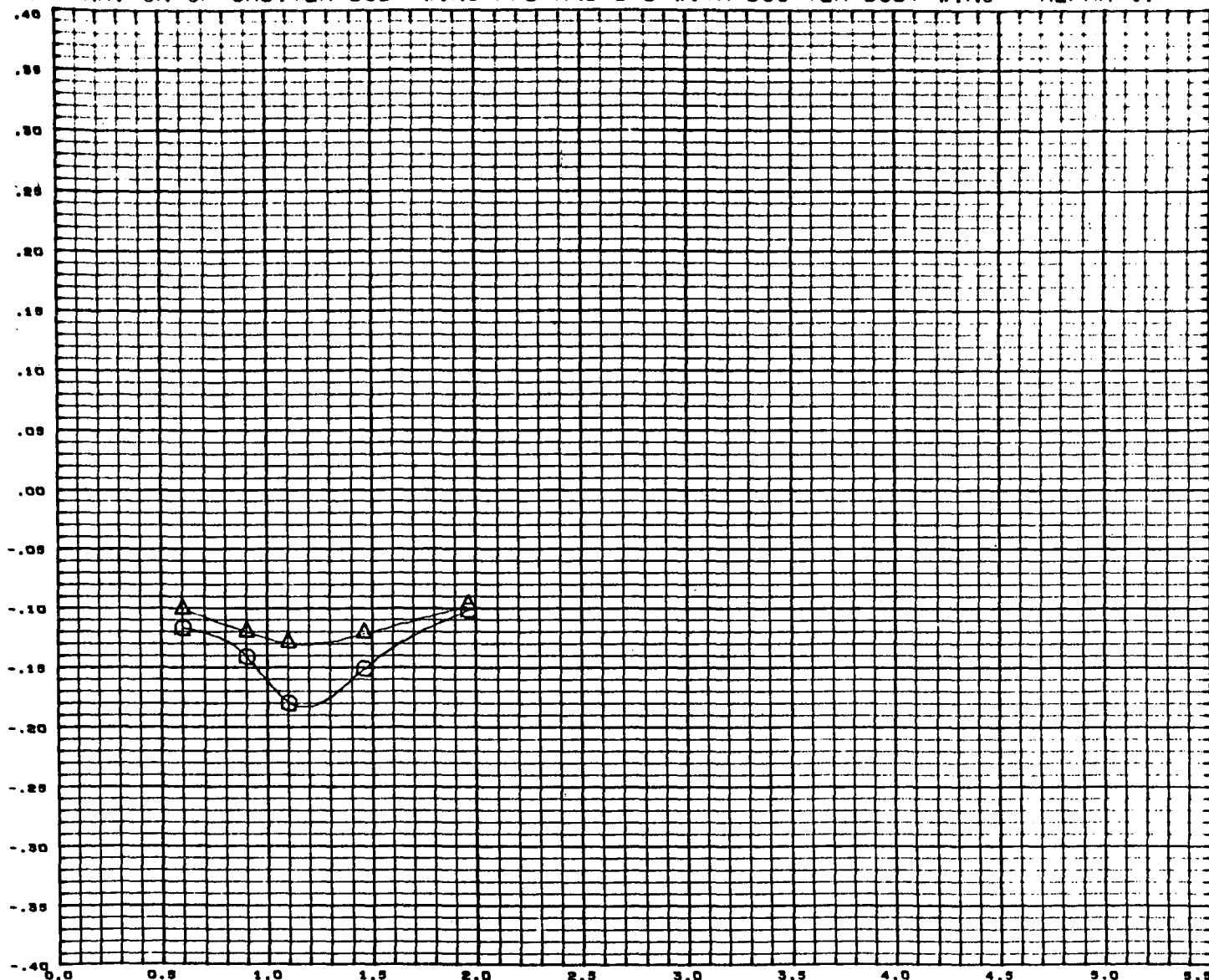
ANGLE OF ATTACK, ALPHA, DEGREE

| | |
|-----------------|-----------------------------------|
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
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| (13248A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| | | | | | |
|--------|--------|-------|--------|-----------------------|---------------|
| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
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| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.959

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING ALPHA=0.



MACH NUMBER

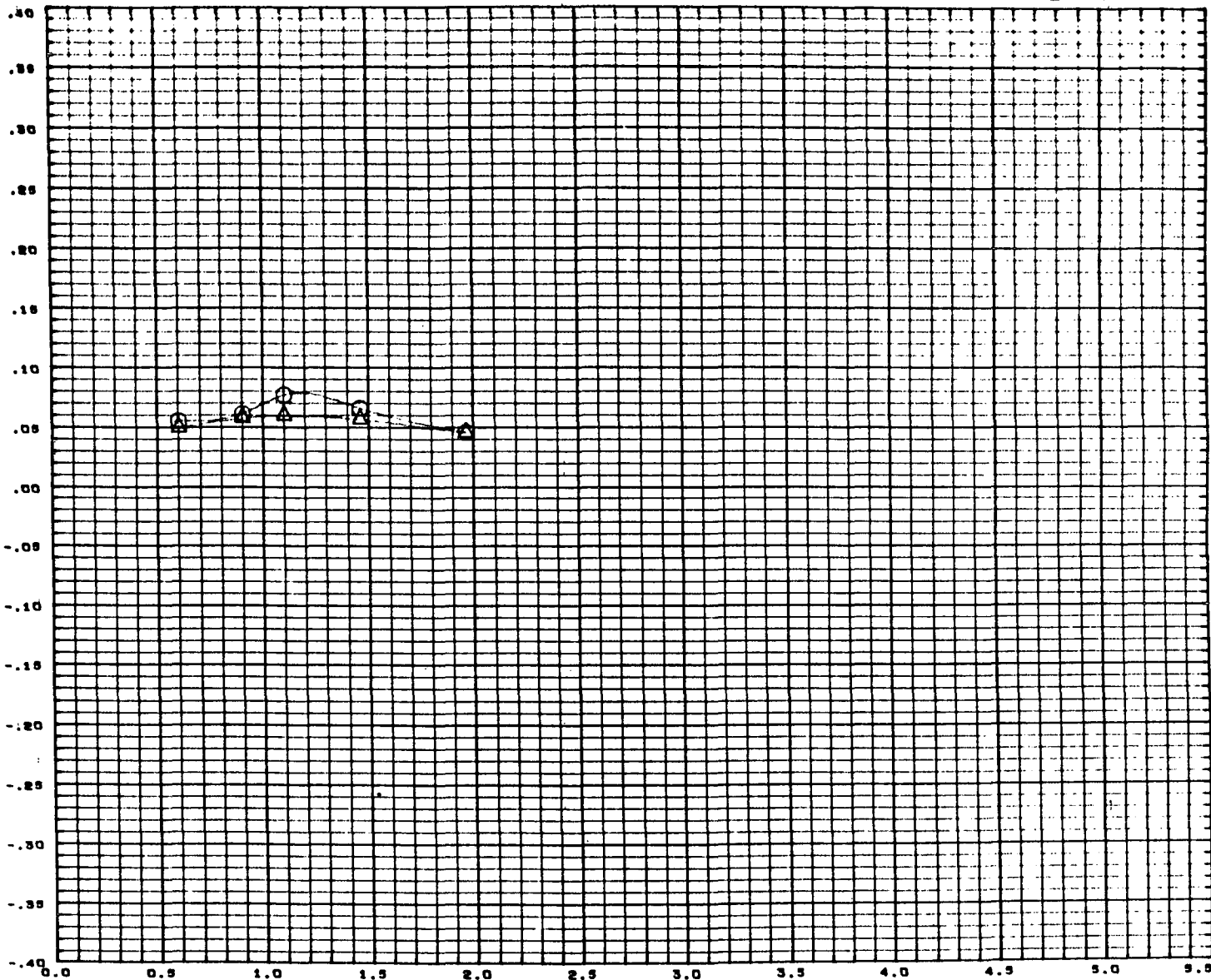
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|-----------------------------------|
| (J3210A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |
| (J3246A) | MSFC490 NR/GD LAUNCH B20W14+B5W17 |

| ORBIT | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|-------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING ALPHA=0.

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - CNALPHA (PER DEGREE)



MACH NUMBER

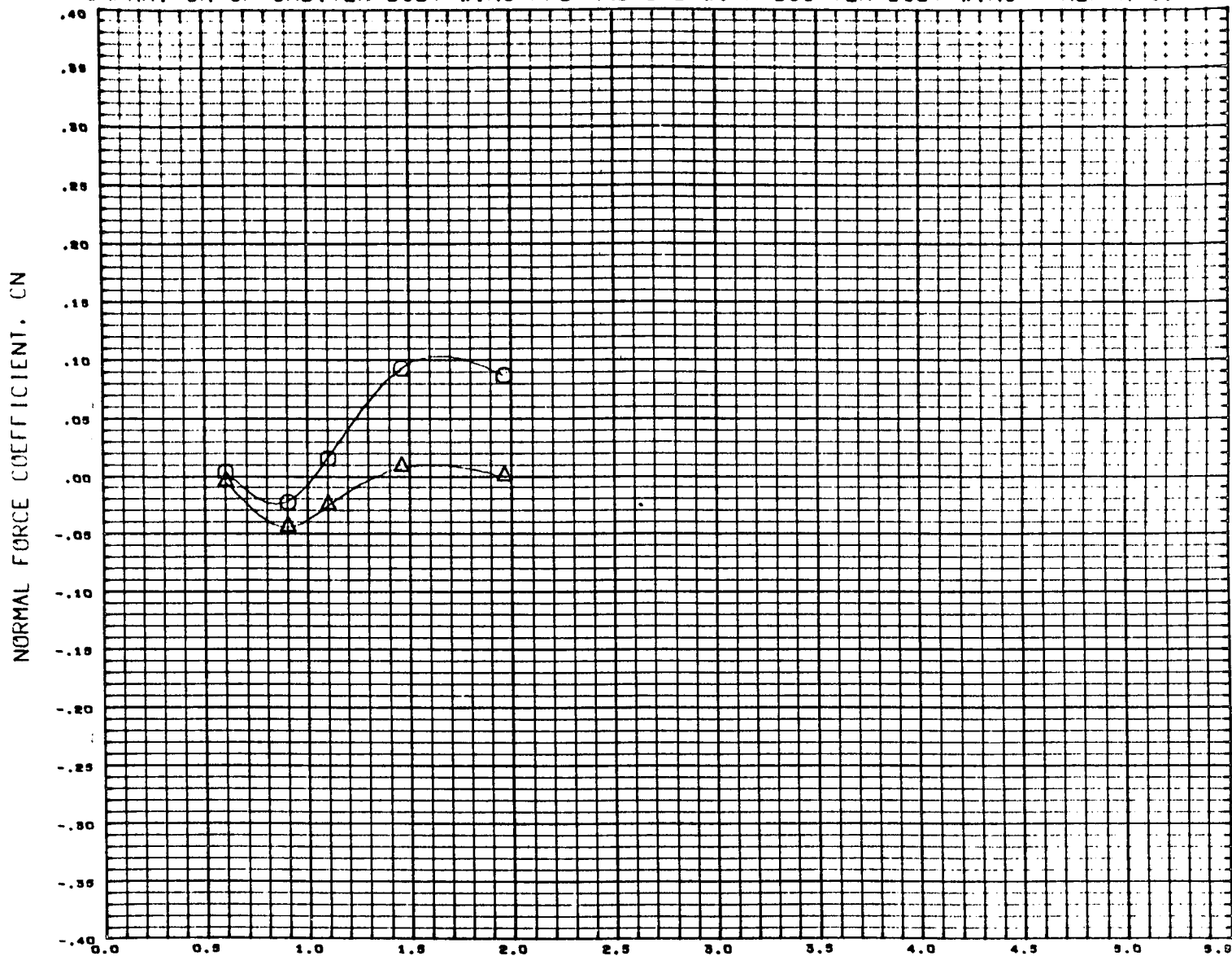
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (J3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17
 (J3246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

| ORBINC | POSITN | BETA | ELVATR |
|--------|--------|-------|--------|
| 0.000 | 1.000 | 0.000 | 0.000 |
| 0.000 | 4.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6960 SQ IN |
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| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0033 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING ALPHA=0.



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3210A) MSFC490 NR/GD LAUNCH B20W14+B5W17
 (K3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION |
|--------|--------|-------|--------|-----------------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING ALPHA=0.



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3210A) MSFC490 NR/GD LAUNCH B20W14+B3W17
 (K3246A) MSFC490 NR/GD LAUNCH B20W14+B3W17

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION |
|--------|--------|-------|--------|-----------------------|
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| 0.000 | 4.000 | 0.000 | 0.000 | LREF 3.0990 INCHES |
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| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

ALPHA 0.000

COMPARISON OF ORBITER BODY-WING P/B AND B/B WITH BOOSTER BODY-WING ALPHA=0.



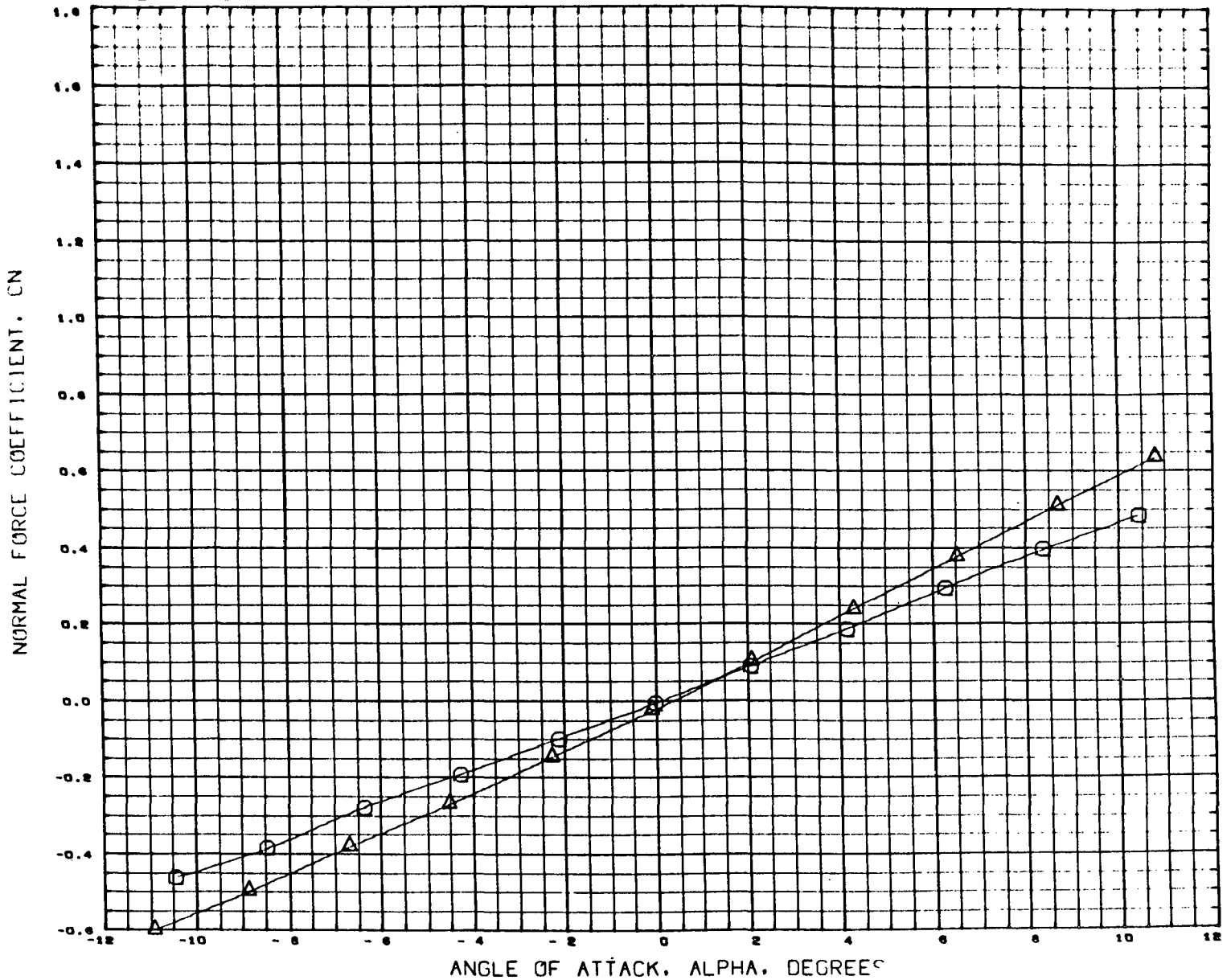
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 (K3246A) MSFC490 NR/GD LAUNCH B20W14+B5W17

MACH NUMBER

| ORBINC | POSITN | BETA | ELVATR | REFERENCE INFORMATION | |
|--------|--------|-------|--------|-----------------------|---------------|
| 0.000 | 1.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 4.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



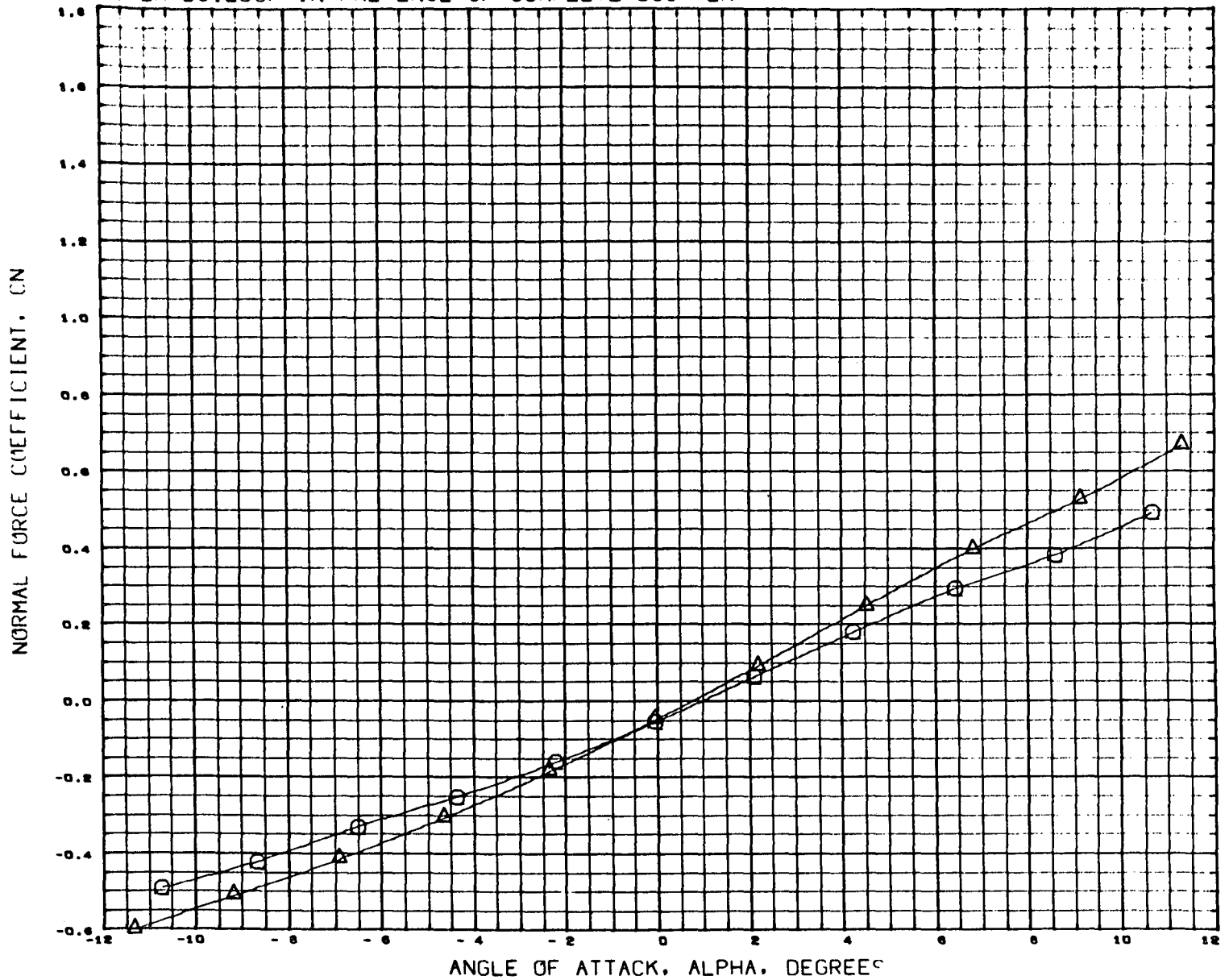
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
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| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14VR+B5W17V17 |

| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
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| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 0.601

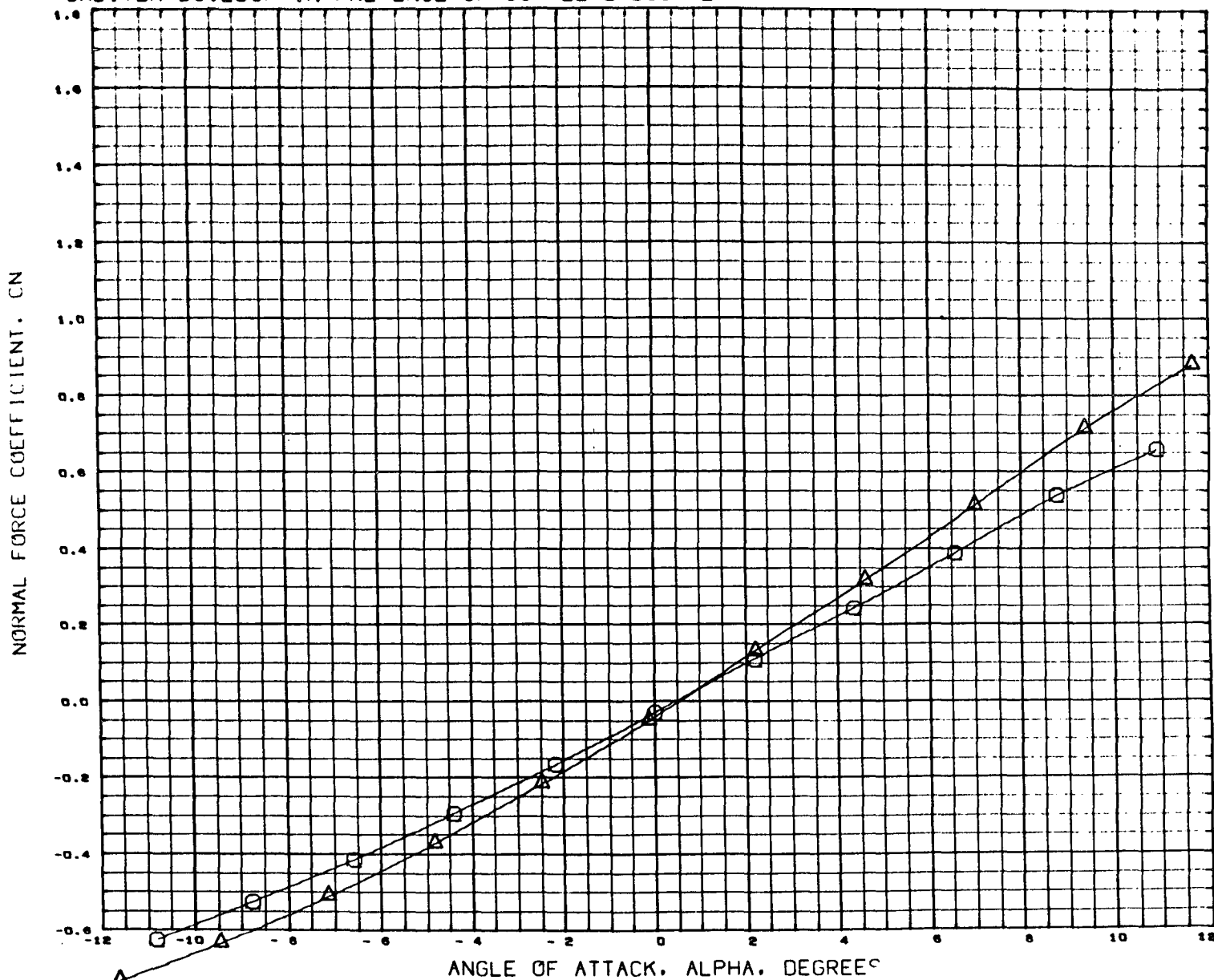
ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3E16A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 | 0.000 | | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (H3E22A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.899

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



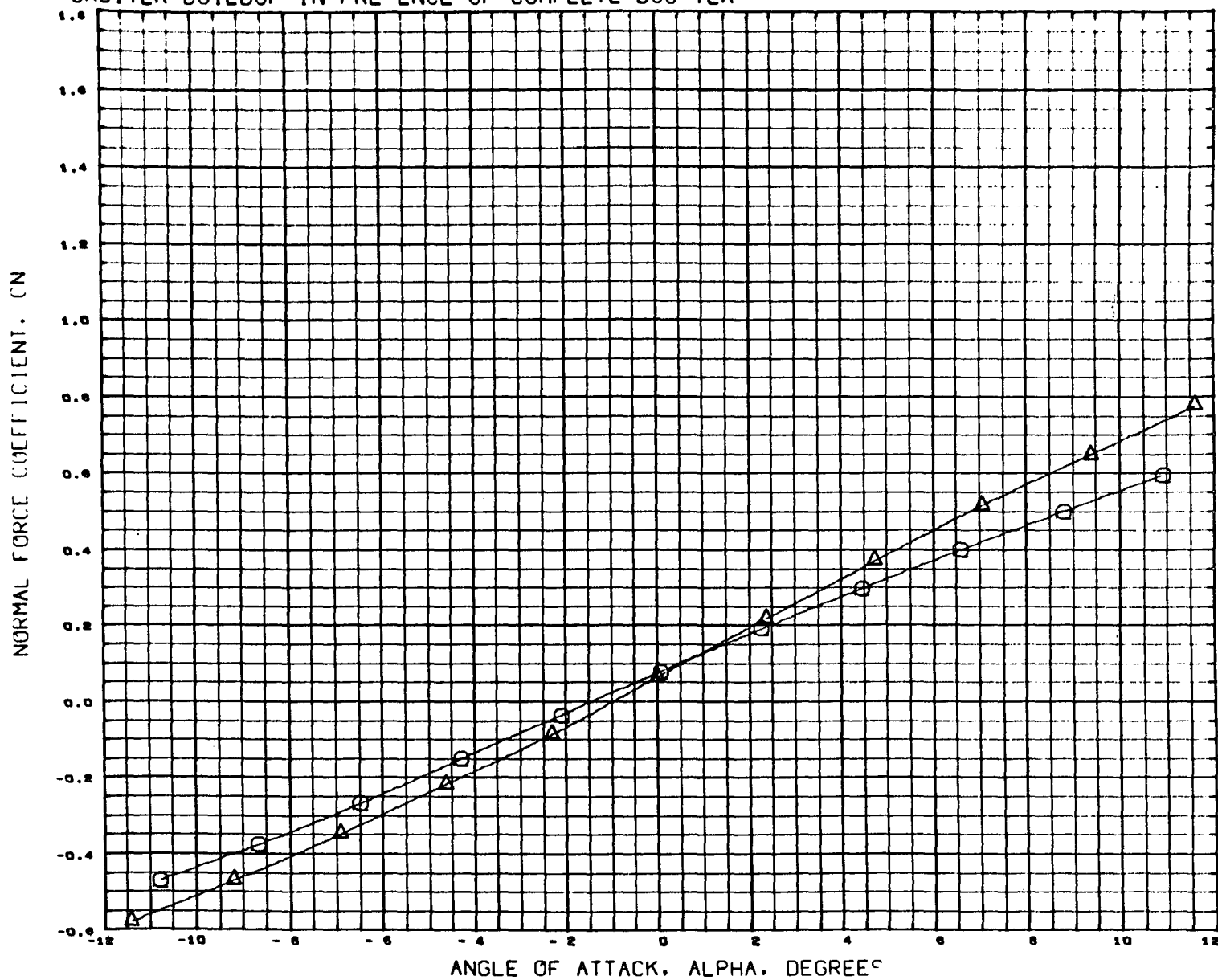
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
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| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
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| ZMRF | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



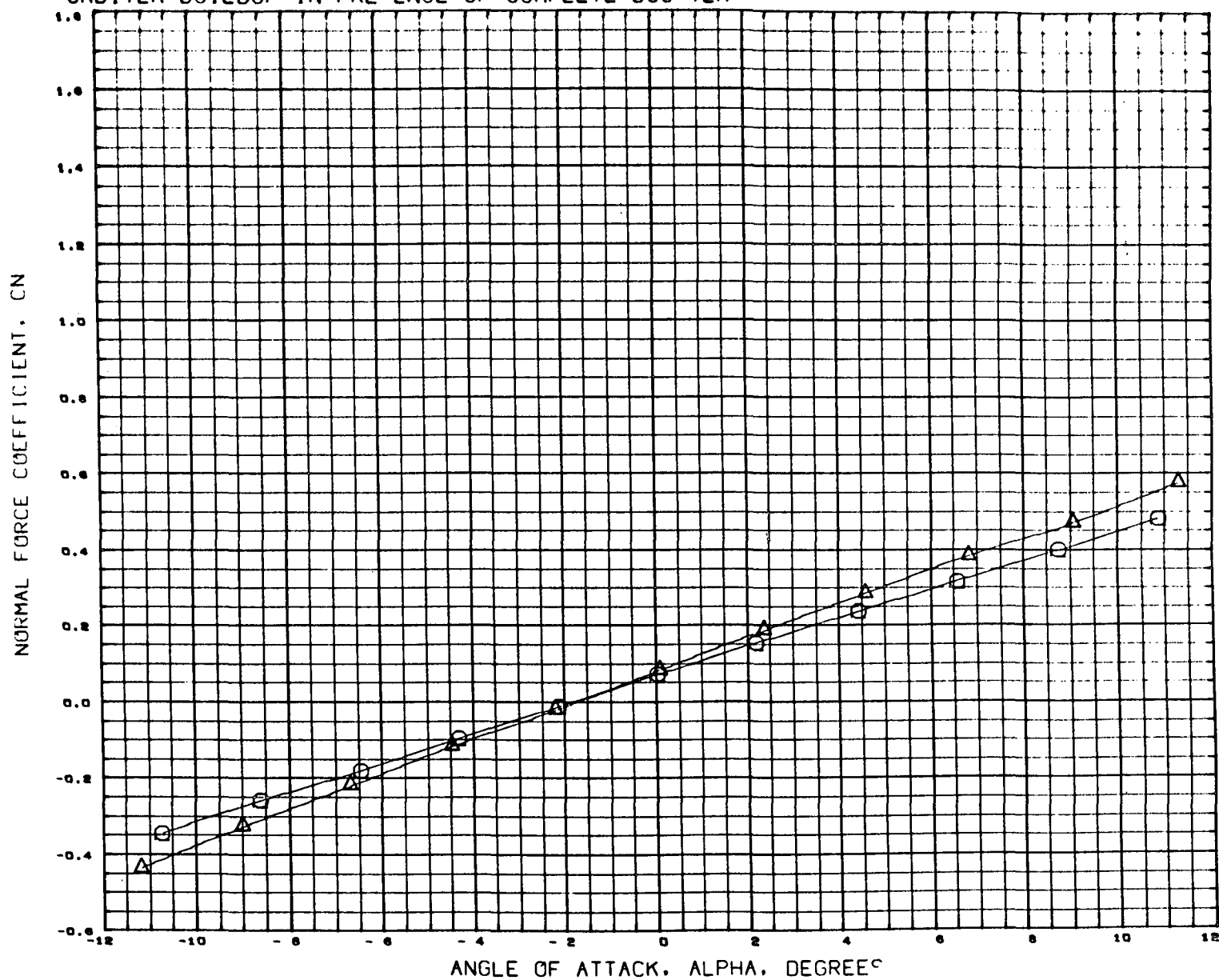
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.459

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



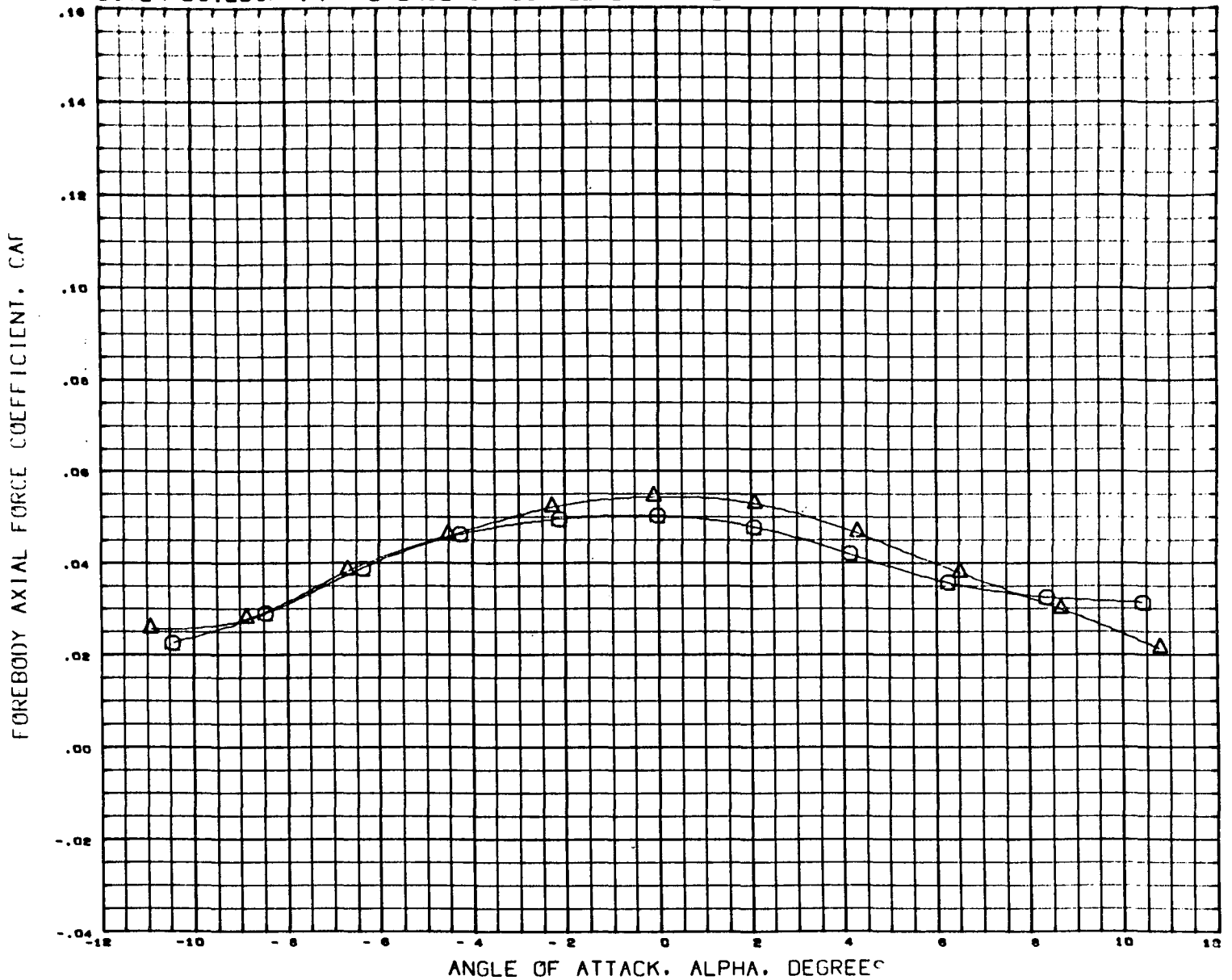
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 (N3222A) M3FC490 NR/GD LAUNCH B2DC4BW14V8+B3W17V17

BETA ELVORB RUDORB ELVATR
 0.000 0.000 0.000 0.000
 0.000 0.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.961

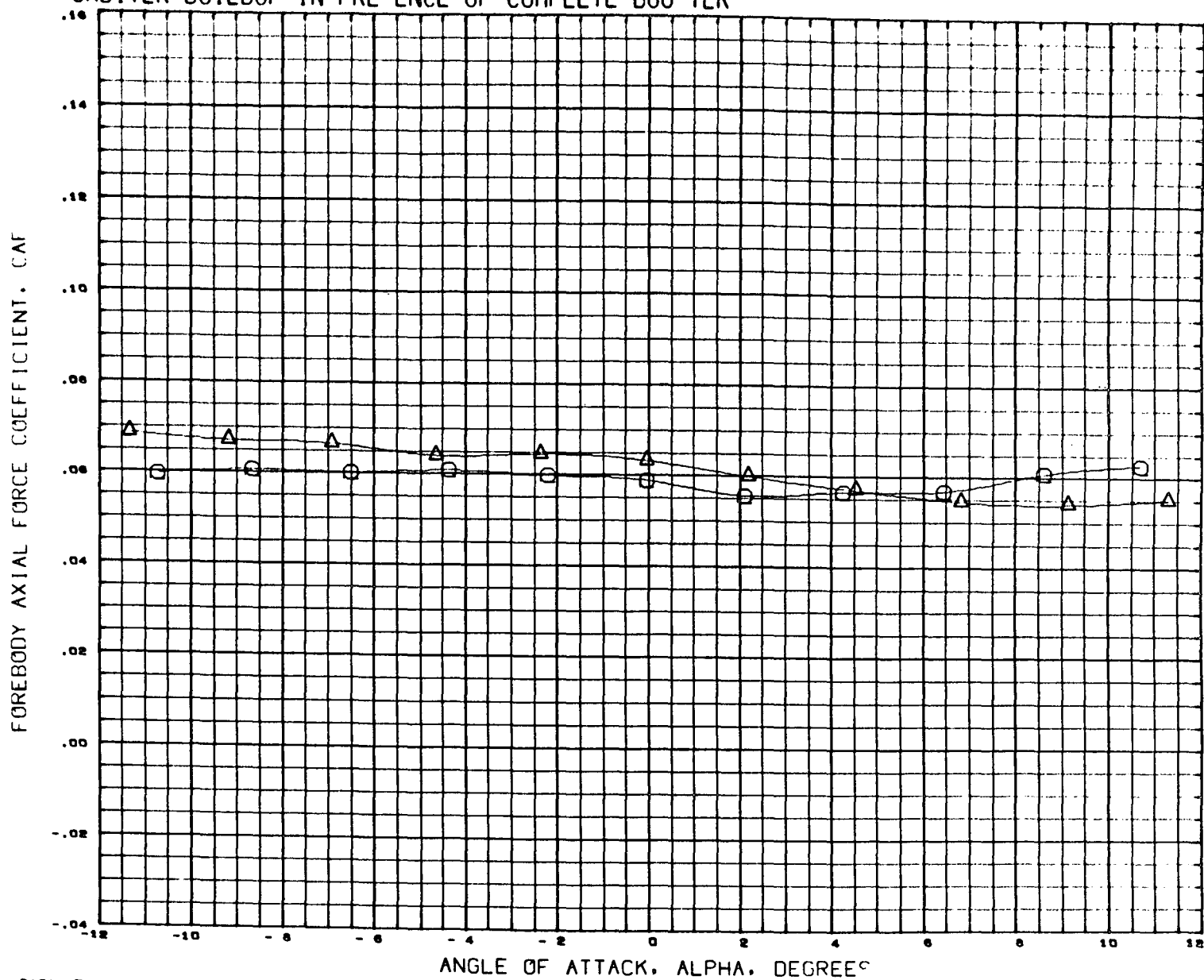
ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (N3216A) | MSFC490 NR/GD LAUNCH 820C4BW14V8+B5V17 | 0.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (N3222A) | MSFC490 NR/GD LAUNCH 820C4BW14V8+B5W17V17 | 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
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| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0039 SCALE |

MACH 0.601

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



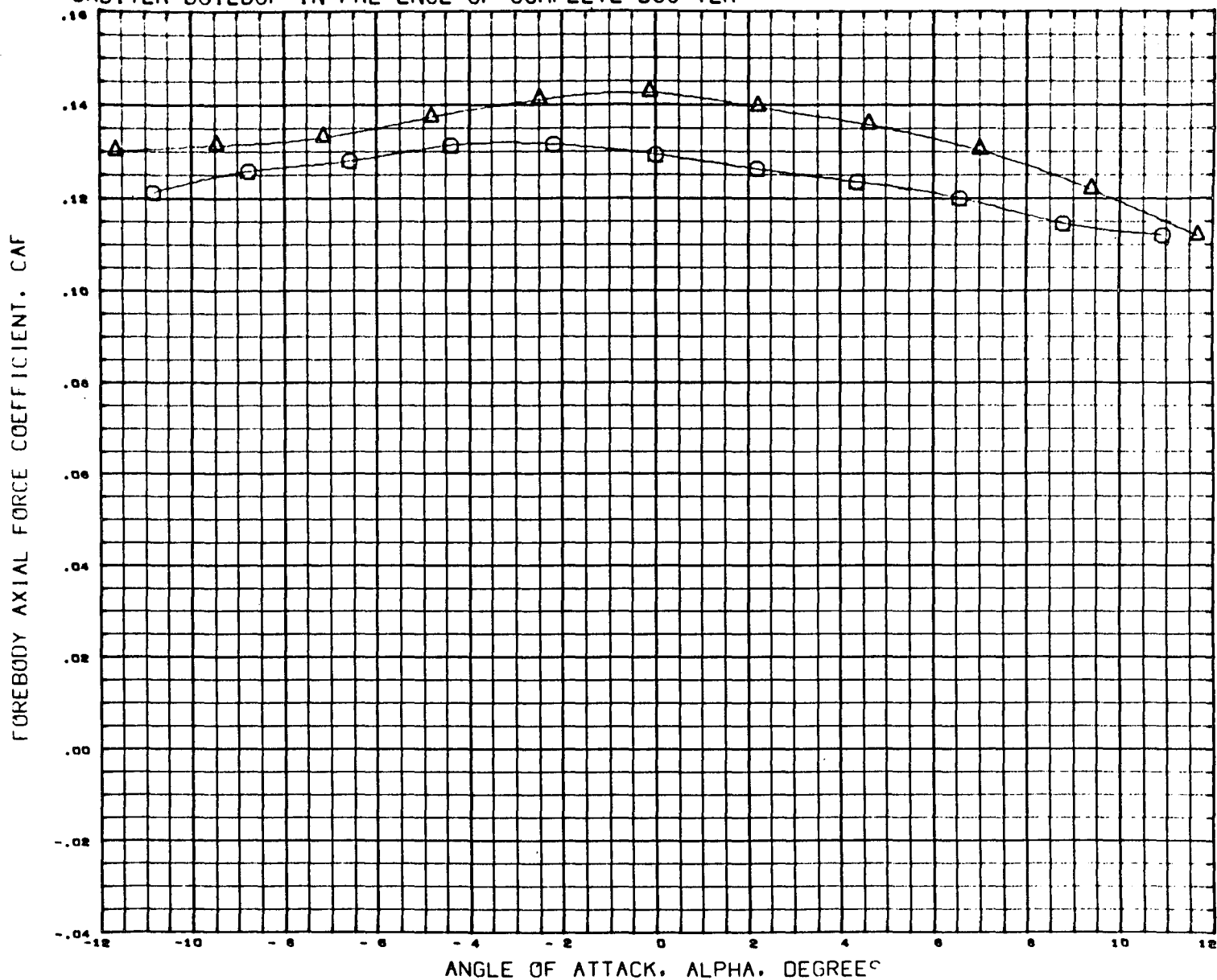
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BETA ELVORB RUDORB ELVATR
 0.000 0.000 0.000 0.000
 0.000 0.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
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 SCALE 0.0035 SCALE

MACH 0.899

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



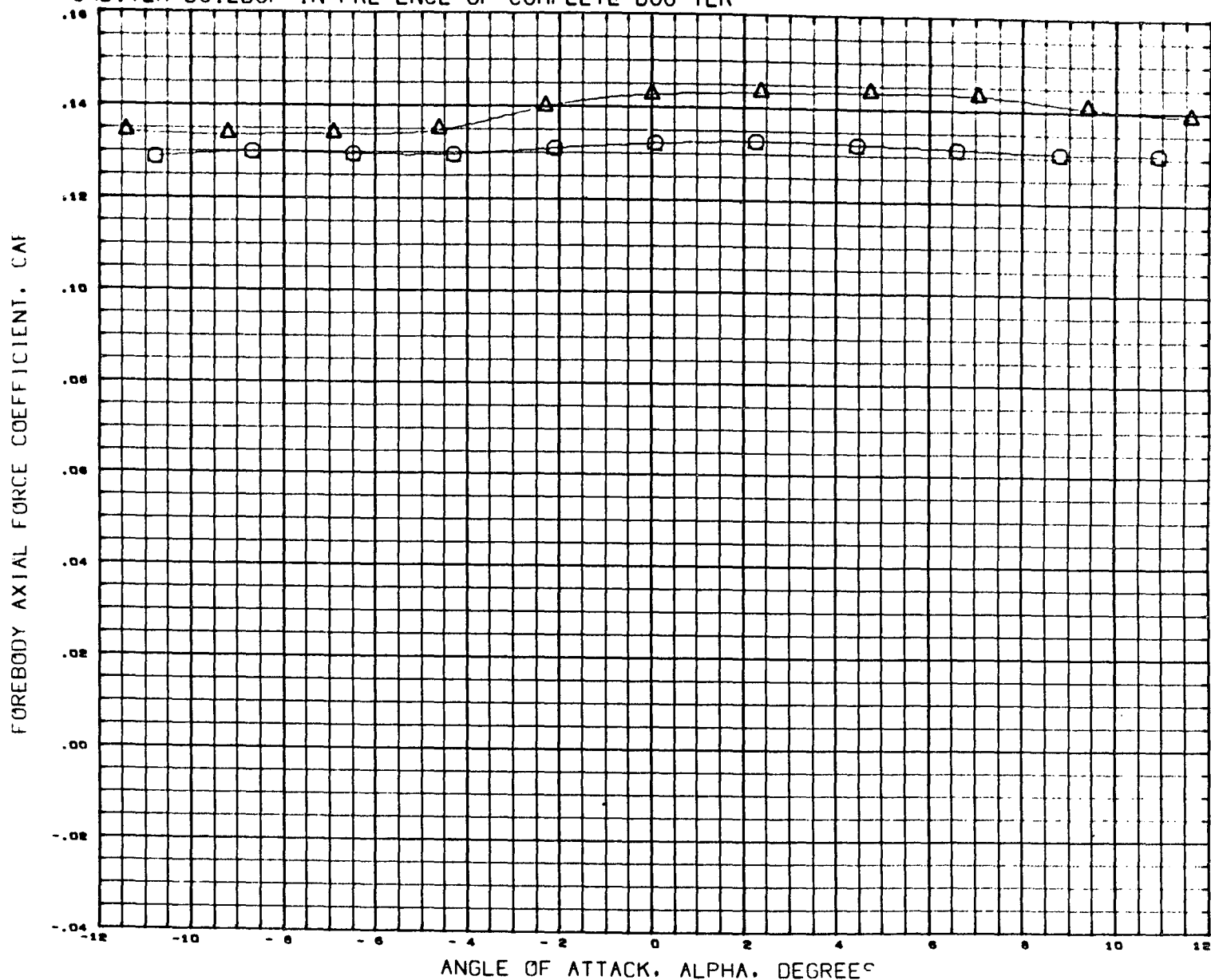
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
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| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
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| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

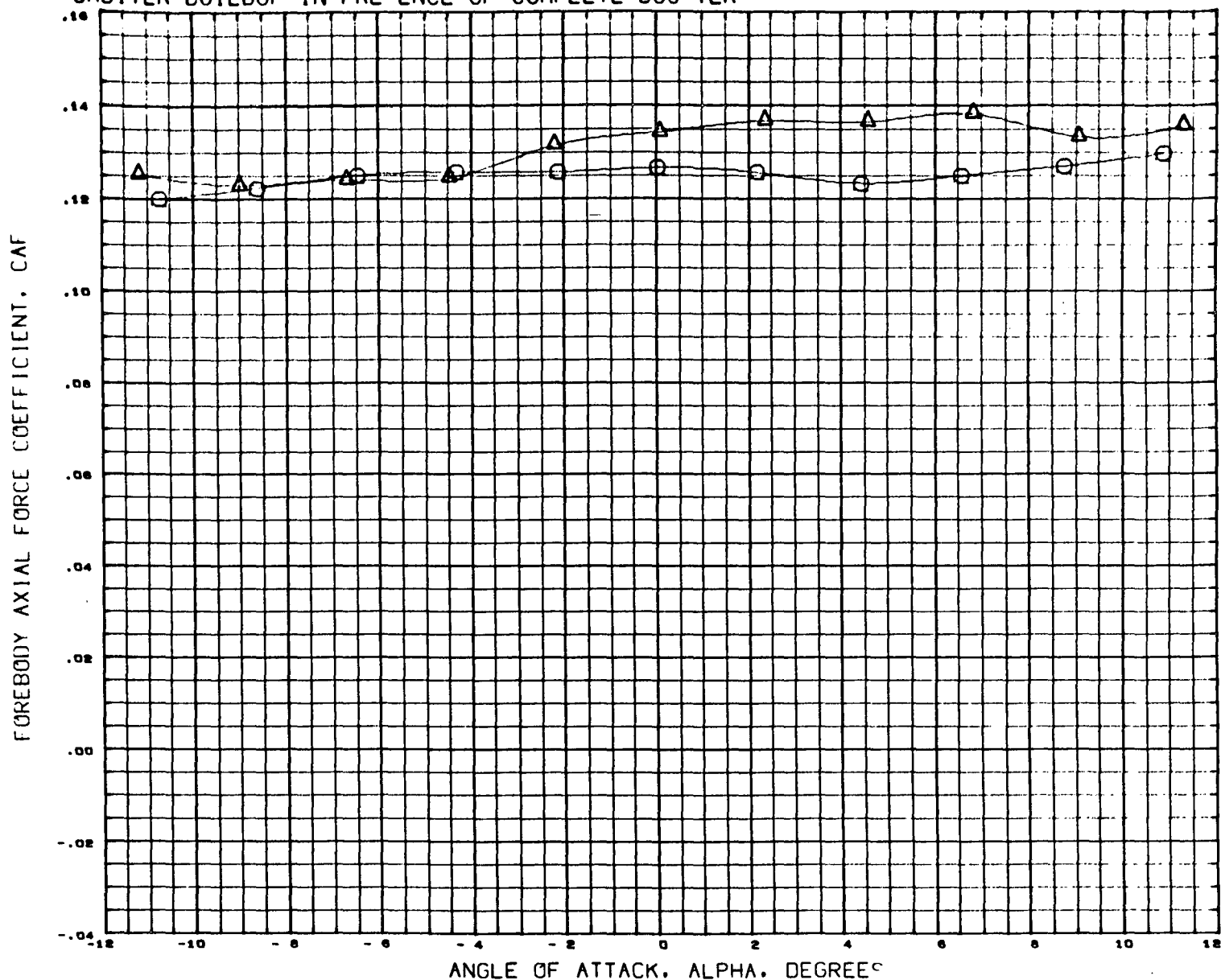


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3216A) | MSFC490 NR/GD LAUNCH 820C4BW14V8+B5V17 |
| (N3222A) | MSFC490 NR/GD LAUNCH 820C4BW14V8+B5W17V17 |

| BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.459

ORBITER BUILDUP IN PRE^CENCE OF COMPLETE BOOSTER

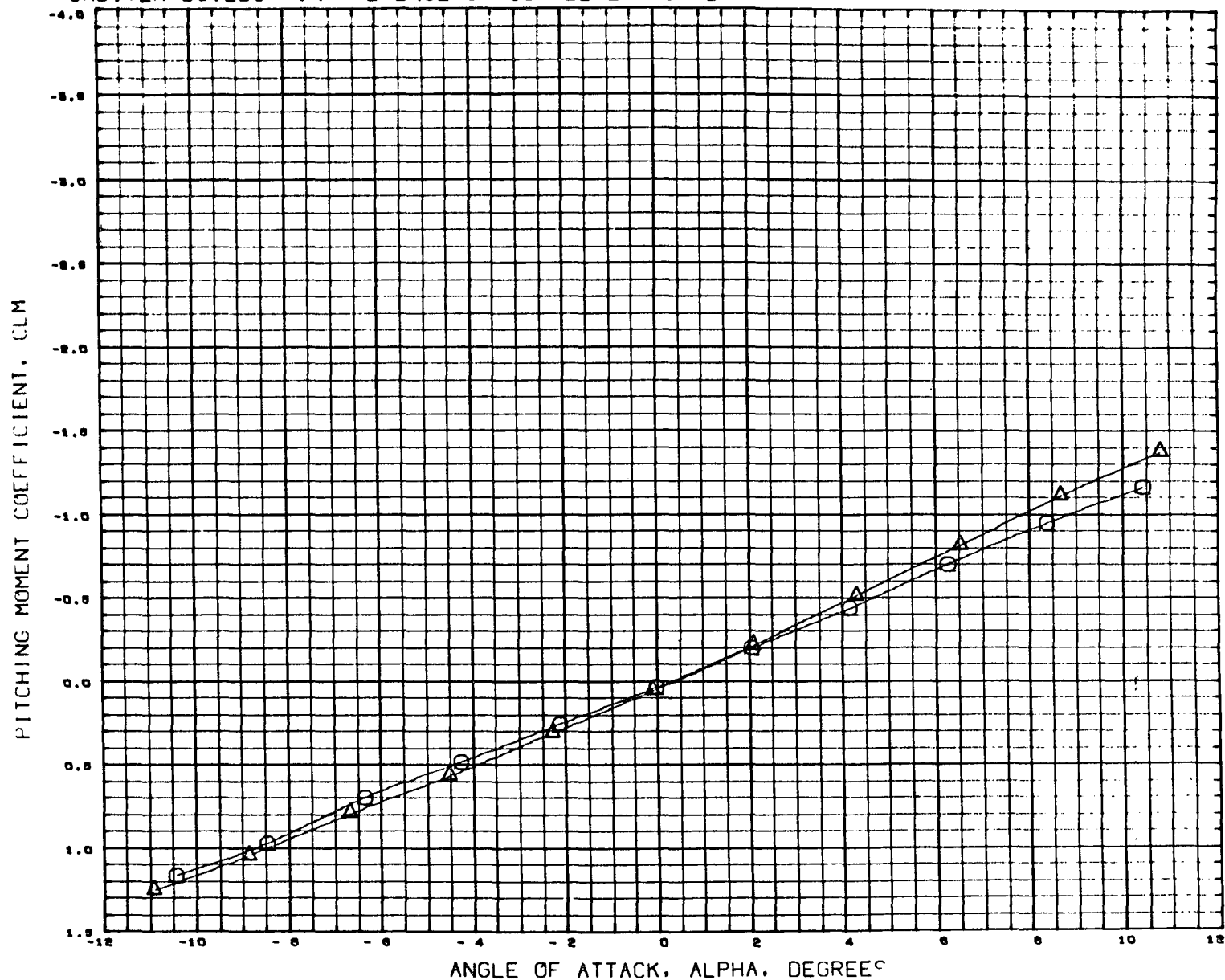


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+85V17 |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17 |

| BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | | 0.000 | 0.000 | SREF 15.6360 SQ IN |
| 0.000 | 0.000 | 0.000 | 0.000 | LREF 3.0950 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
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| | | | | SCALE 0.0035 SCALE |

MACH 1.961

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

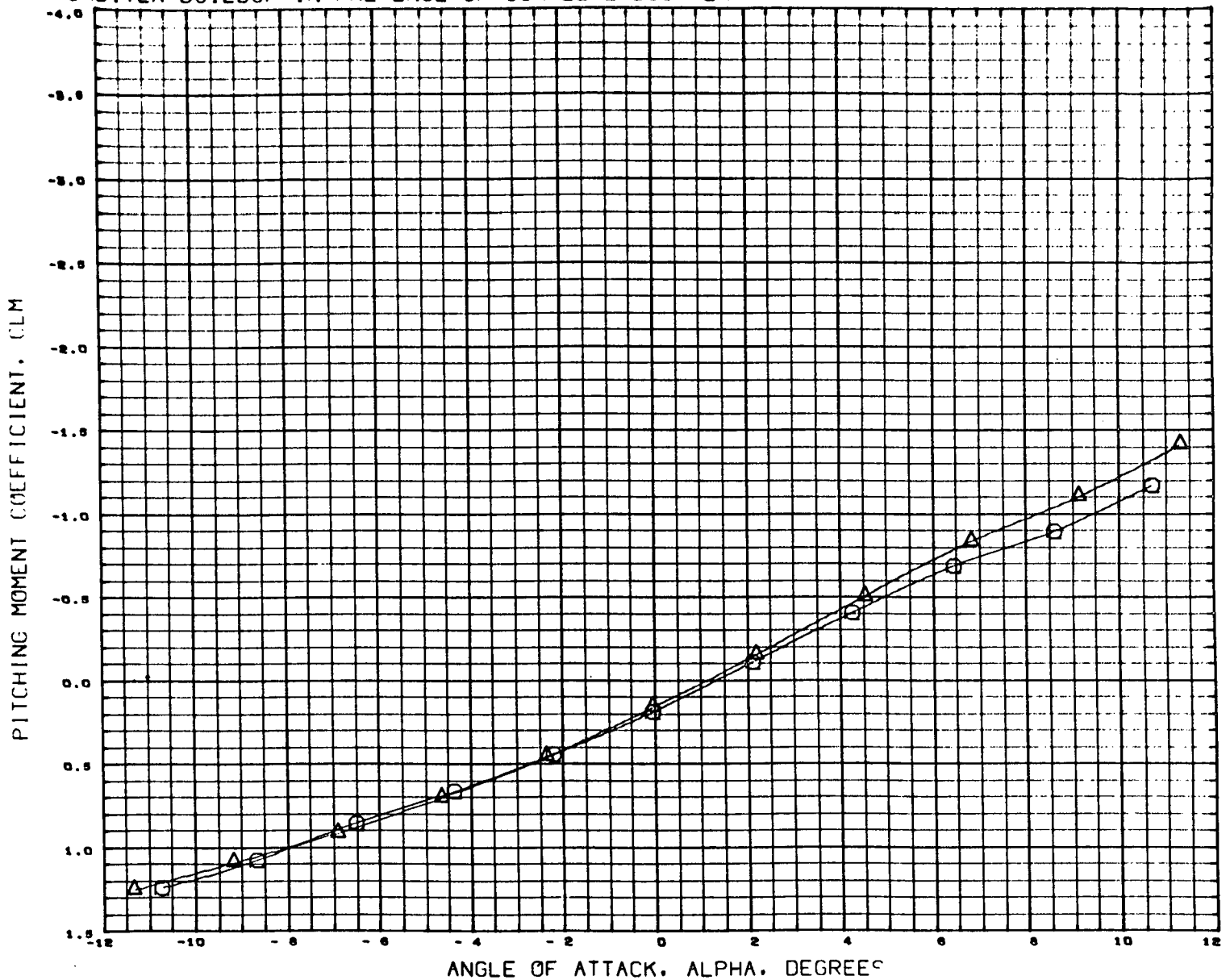


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
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| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
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| | | | | ZMRP | 0.0000 |
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MACH 0.601

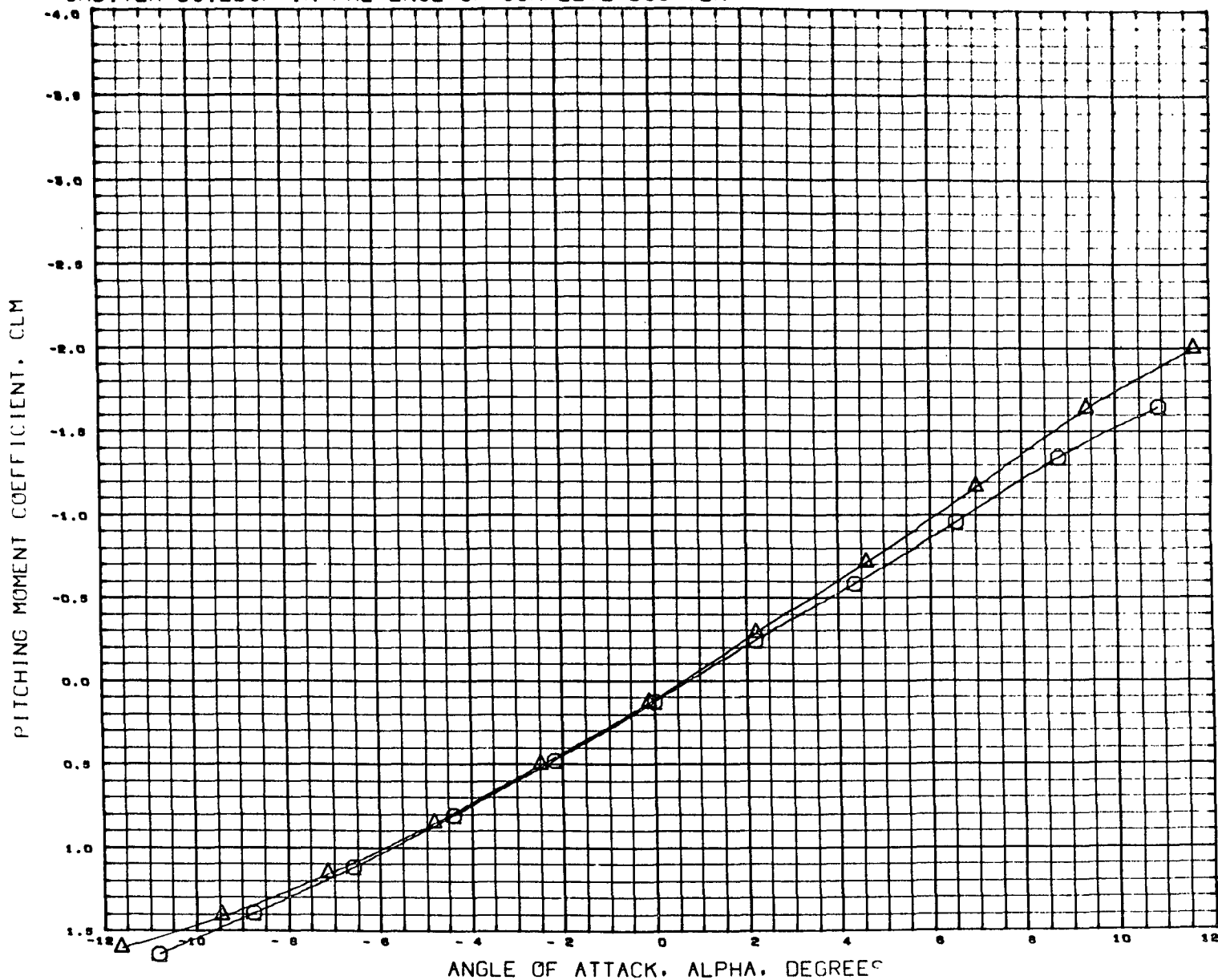
ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+85V17 | 0.000 | | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17 | 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRF | 0.0000 |
| | | | | | | YMRF | 0.0000 |
| | | | | | | ZMRF | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.699

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



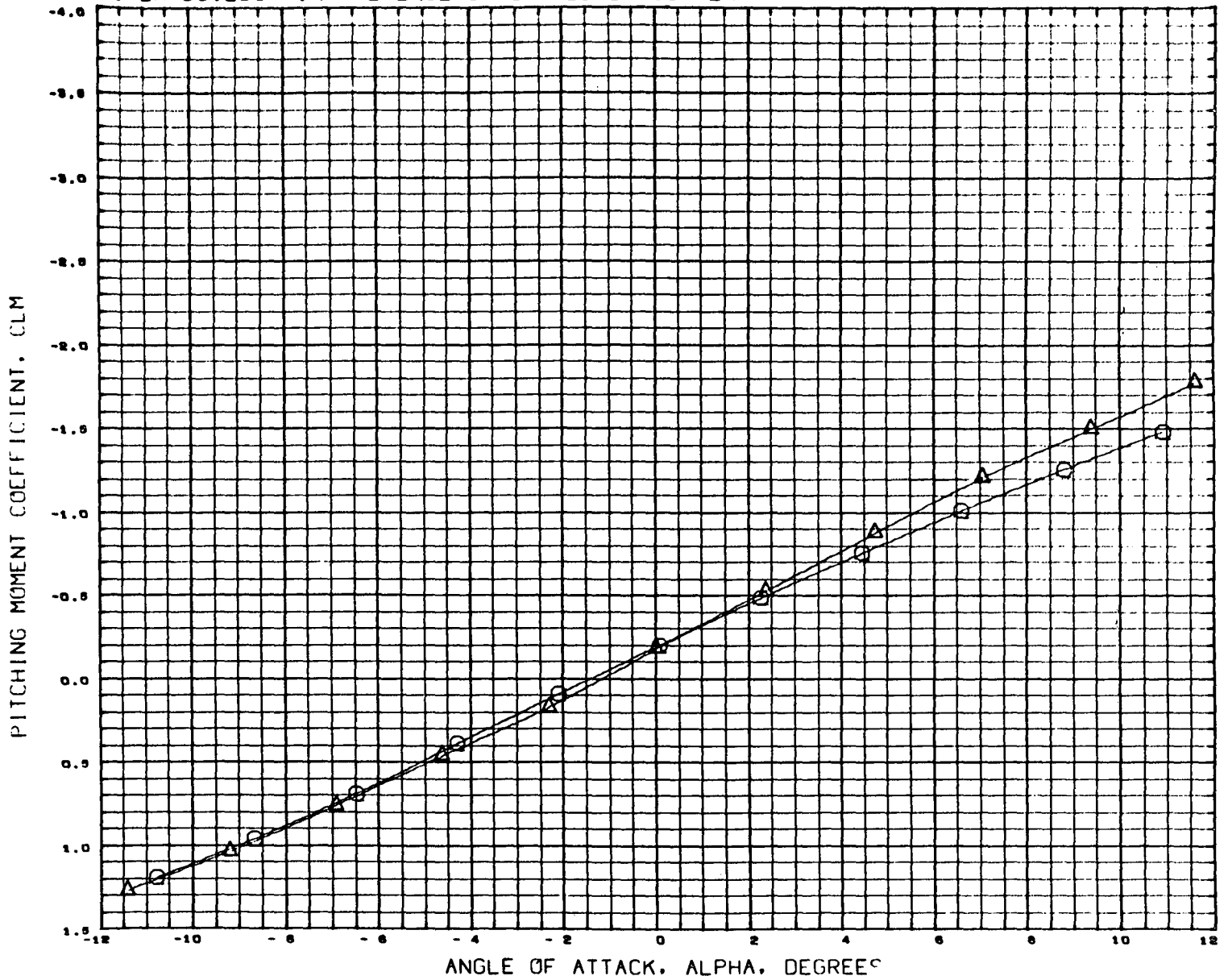
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C4BW14VR+B3V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14VR+B3V17V17 |

| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



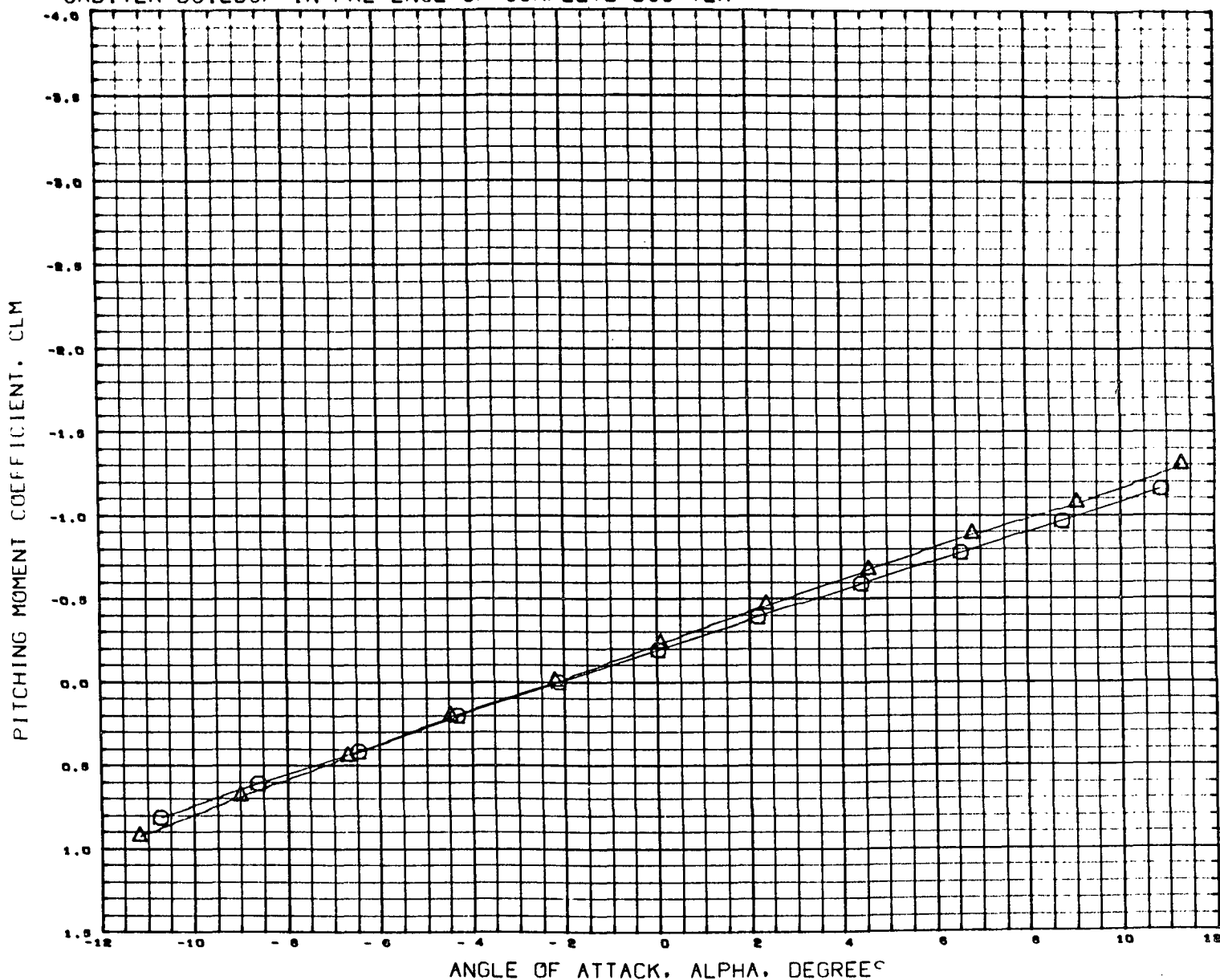
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C4BW14VR+B3V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14VR+B3W17V17 |

| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.499

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (N3216A) | MSFC490 NR/GD LAUNCH B20C4BW14VR+B3V17 |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14VR+B3W17V17 |

| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0930 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.961

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

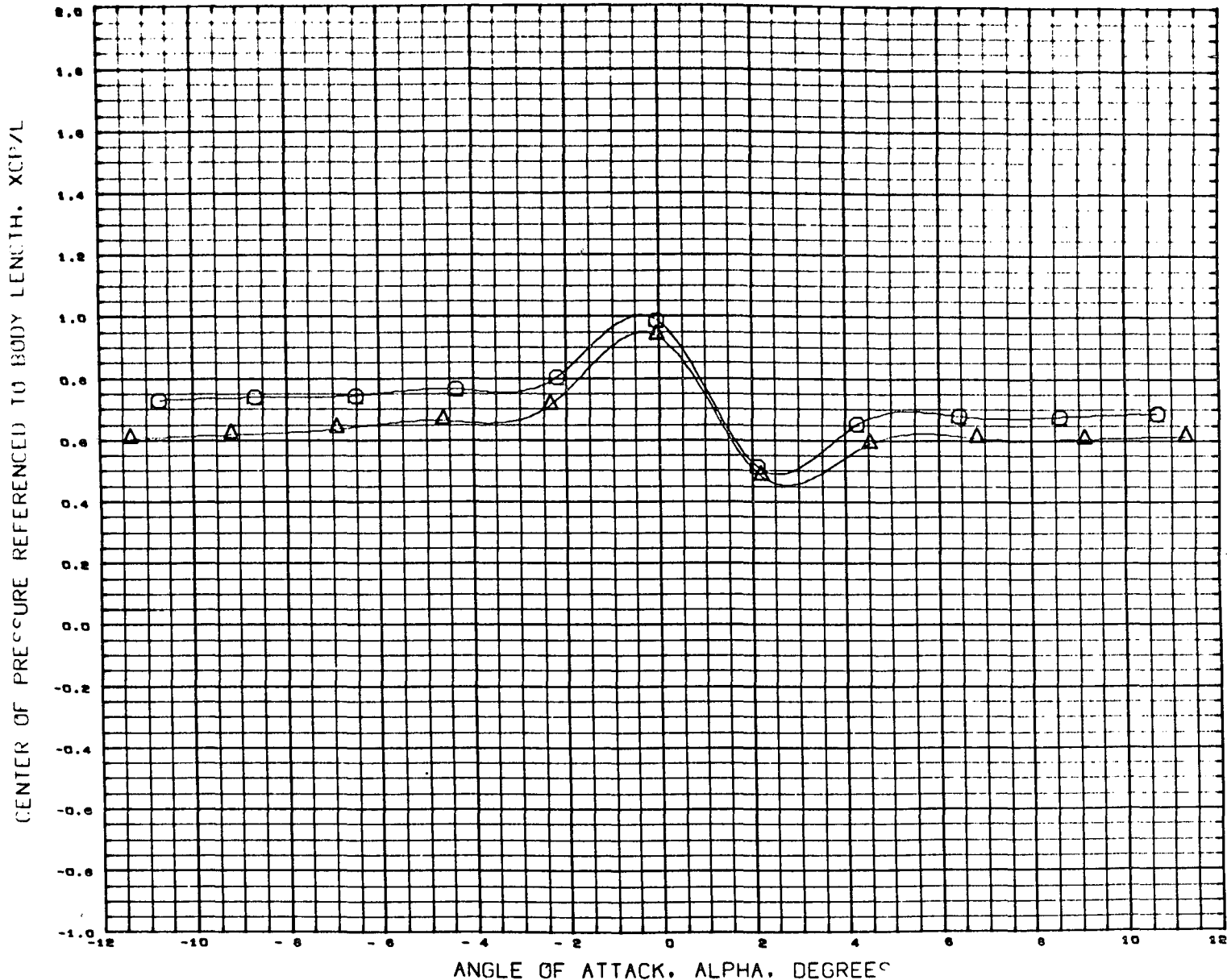


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3216A) MSFC49D NR/GD LAUNCH B20C4BW14V8+B3V17
 (N3222A) MSFC49D NR/GD LAUNCH B20C4BW14V8+B3W17V17

| BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 0.601

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (N3222A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

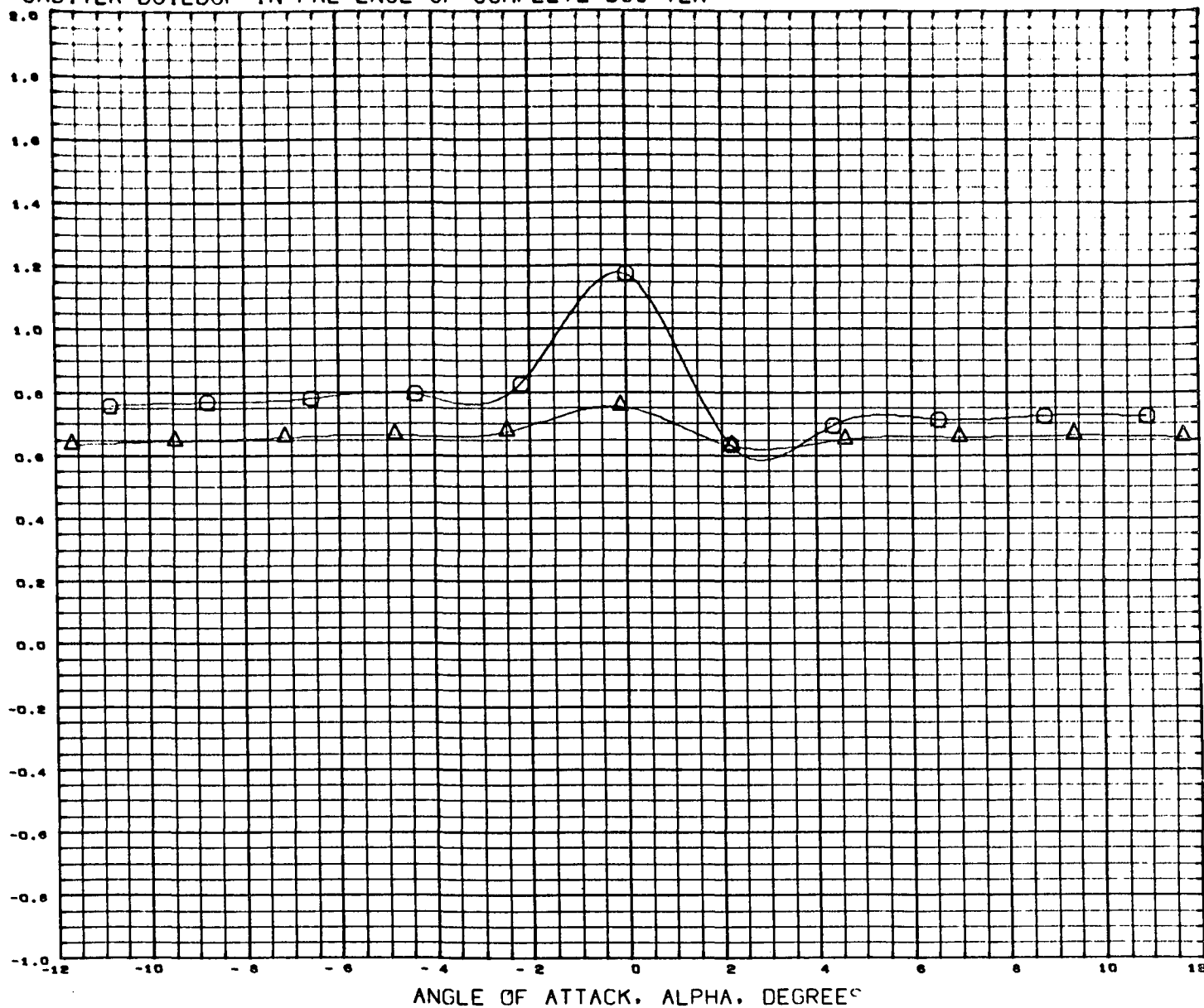
| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0033 SCALE |

MACH 0.899

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L



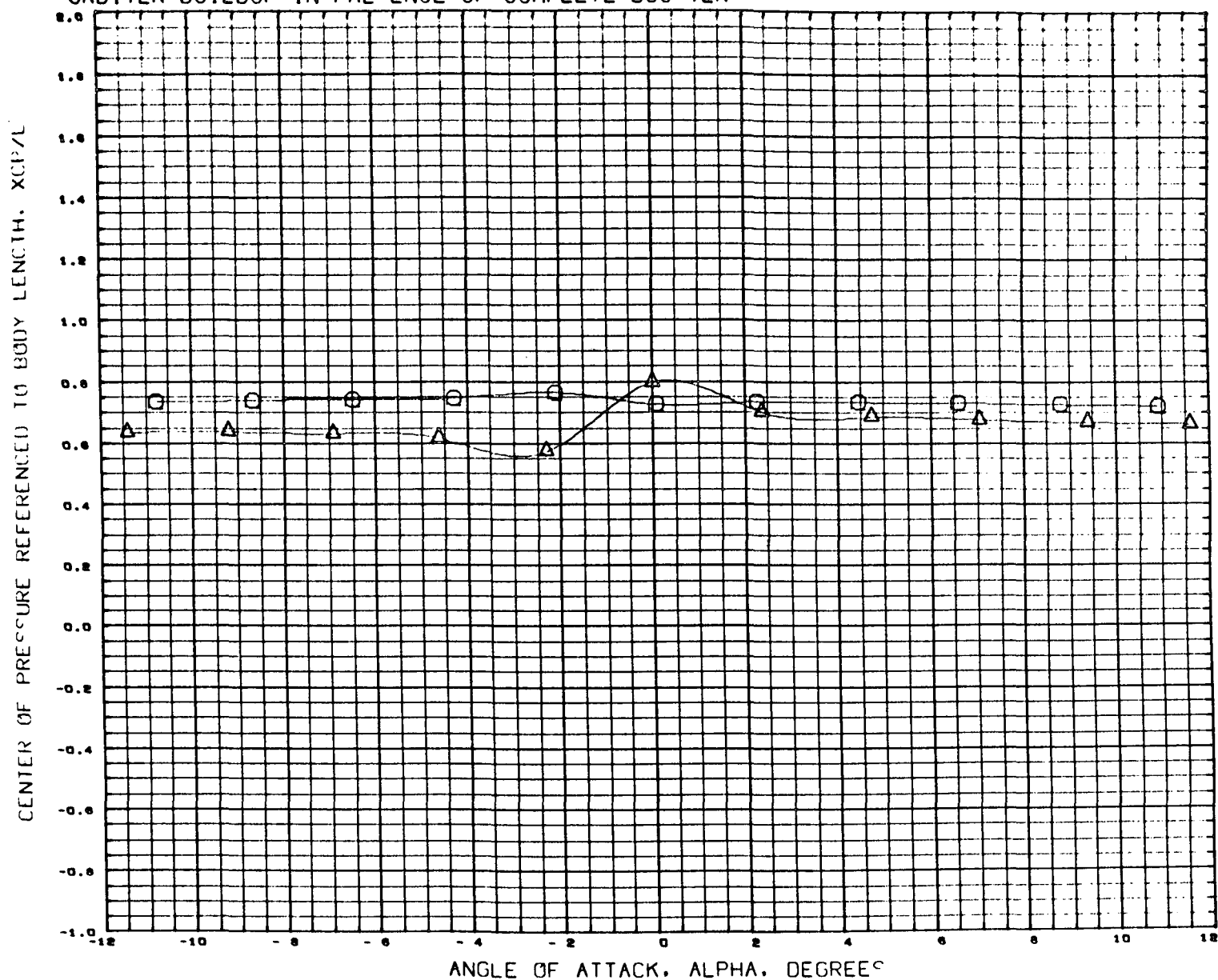
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3218A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 13.6360 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0950 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



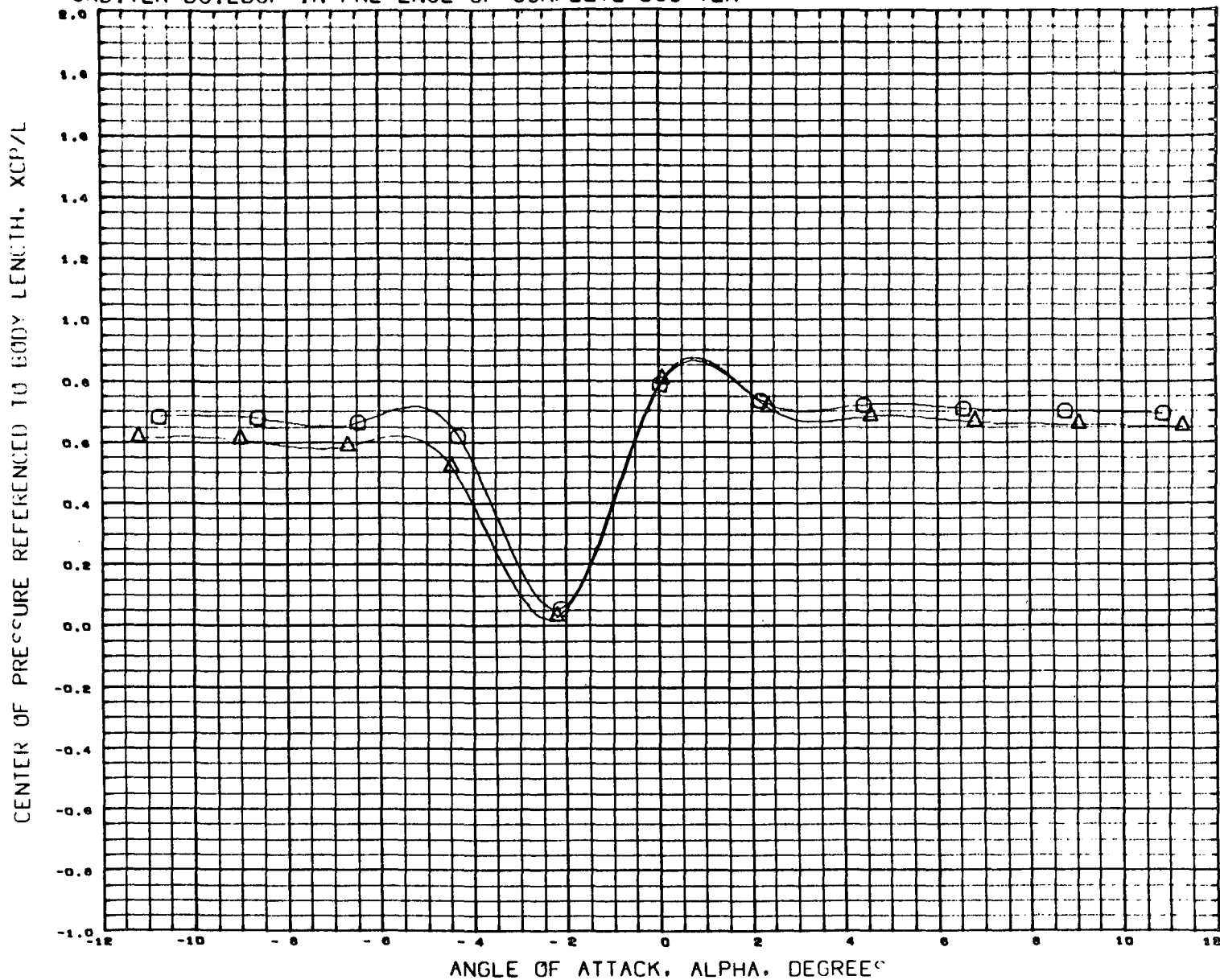
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3216A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B3V17
 (H3222A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B3V17V17

BETA ELVORB RUDORB ELVATR
 0.000 0.000 0.000 0.000
 0.000 0.000 0.000 0.000

REFERENCE INFORMATION
 SREF 19.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.459

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C48W14V8+B3V17 |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17 |

| BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | 0.000 | 0.000 | 0.000 | SREF 15.6960 SQ IN |
| 0.000 | 0.000 | 0.000 | 0.000 | LREF 3.0930 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0035 SCALE |

MACH 1.961

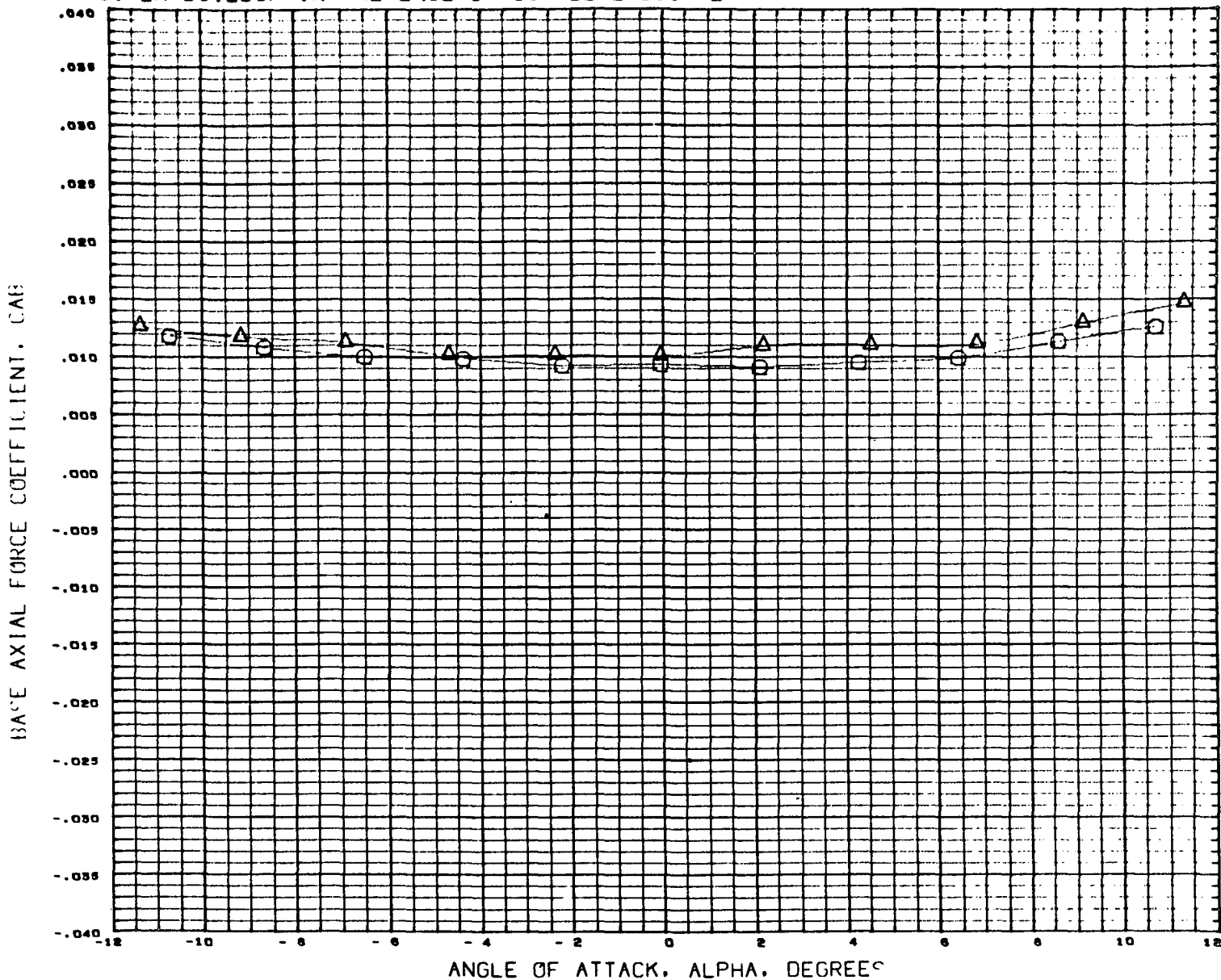
ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B3V17 | 0.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17 | 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.601

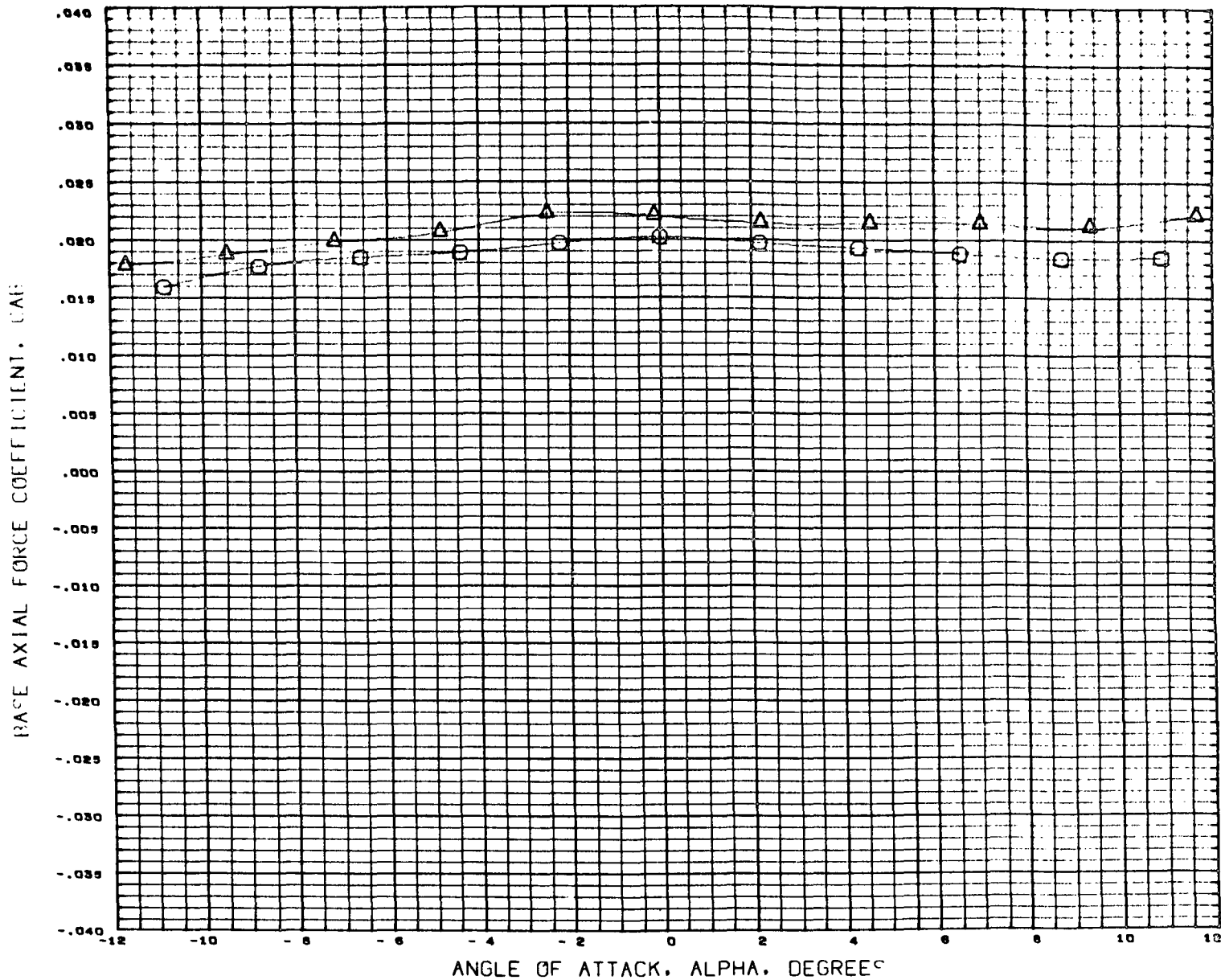
ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C4BW14VR+B5V17 | 0.000 | | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14VR+B5W17V17 | 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.899

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

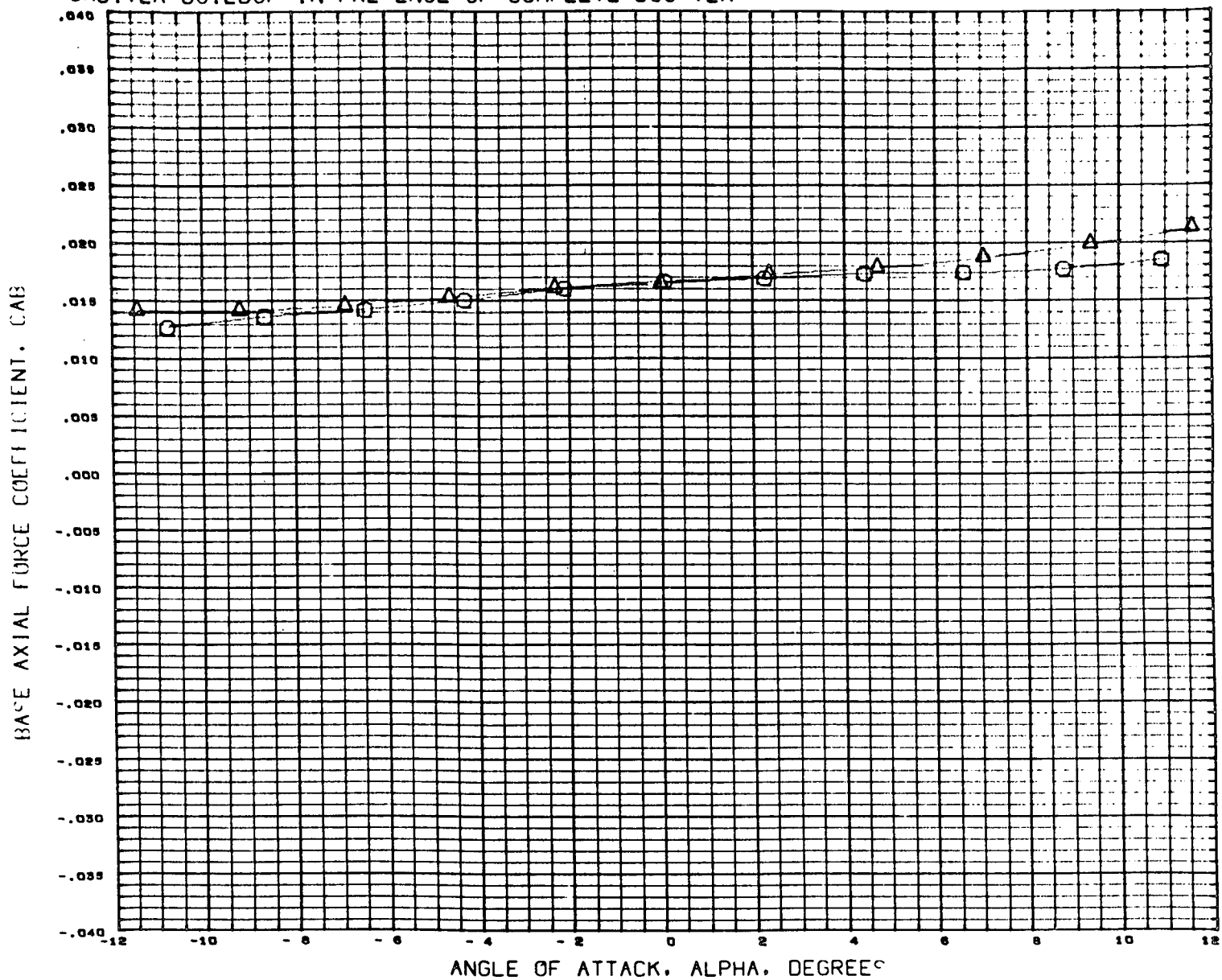


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-------|--------|--------|--------|-----------------------|---------------|
| 0.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6360 SQ IN |
| 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0035 SCALE |

MACH 1.097

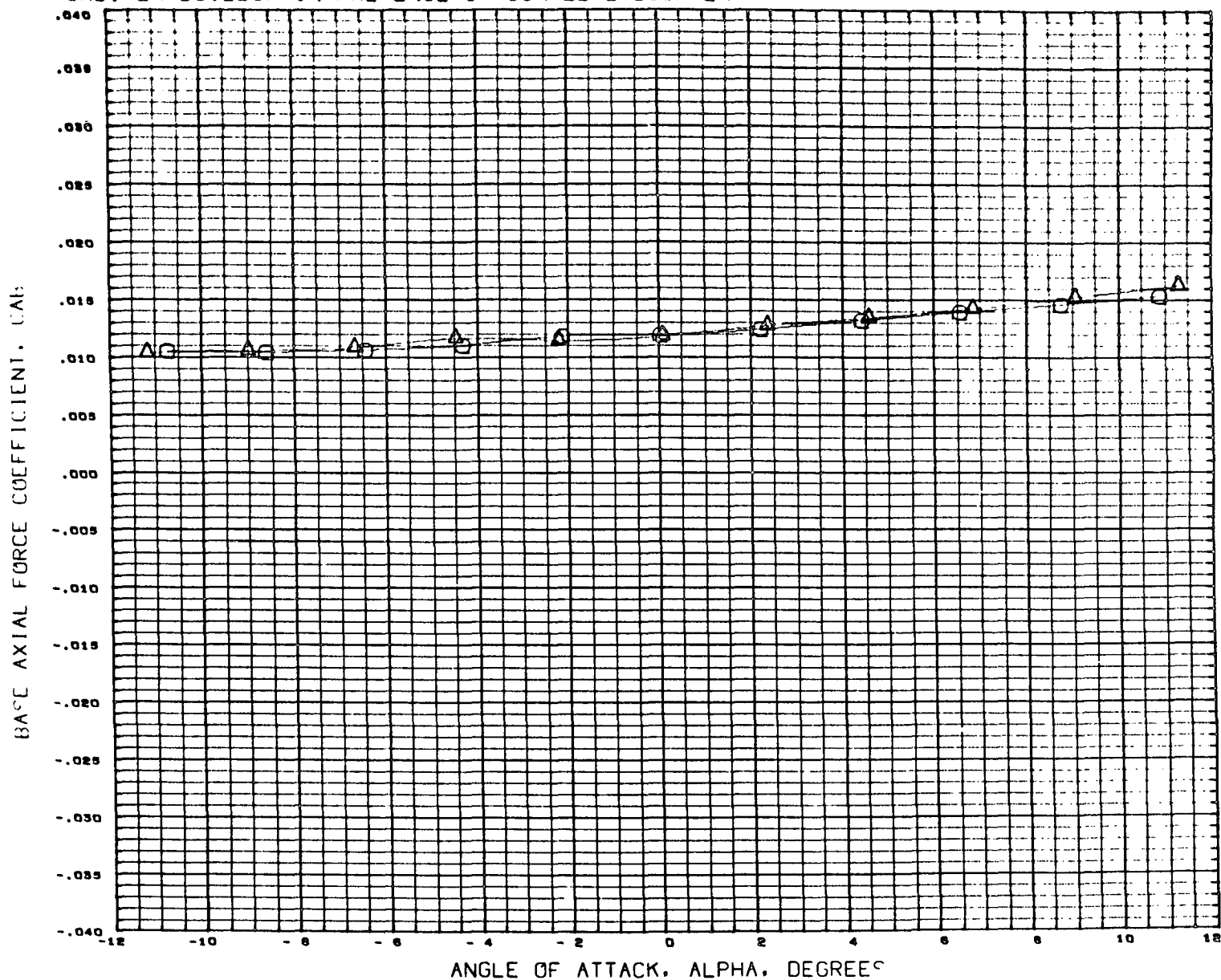
ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 | 0.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (N3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 1.459

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (H3216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 |
| (H3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

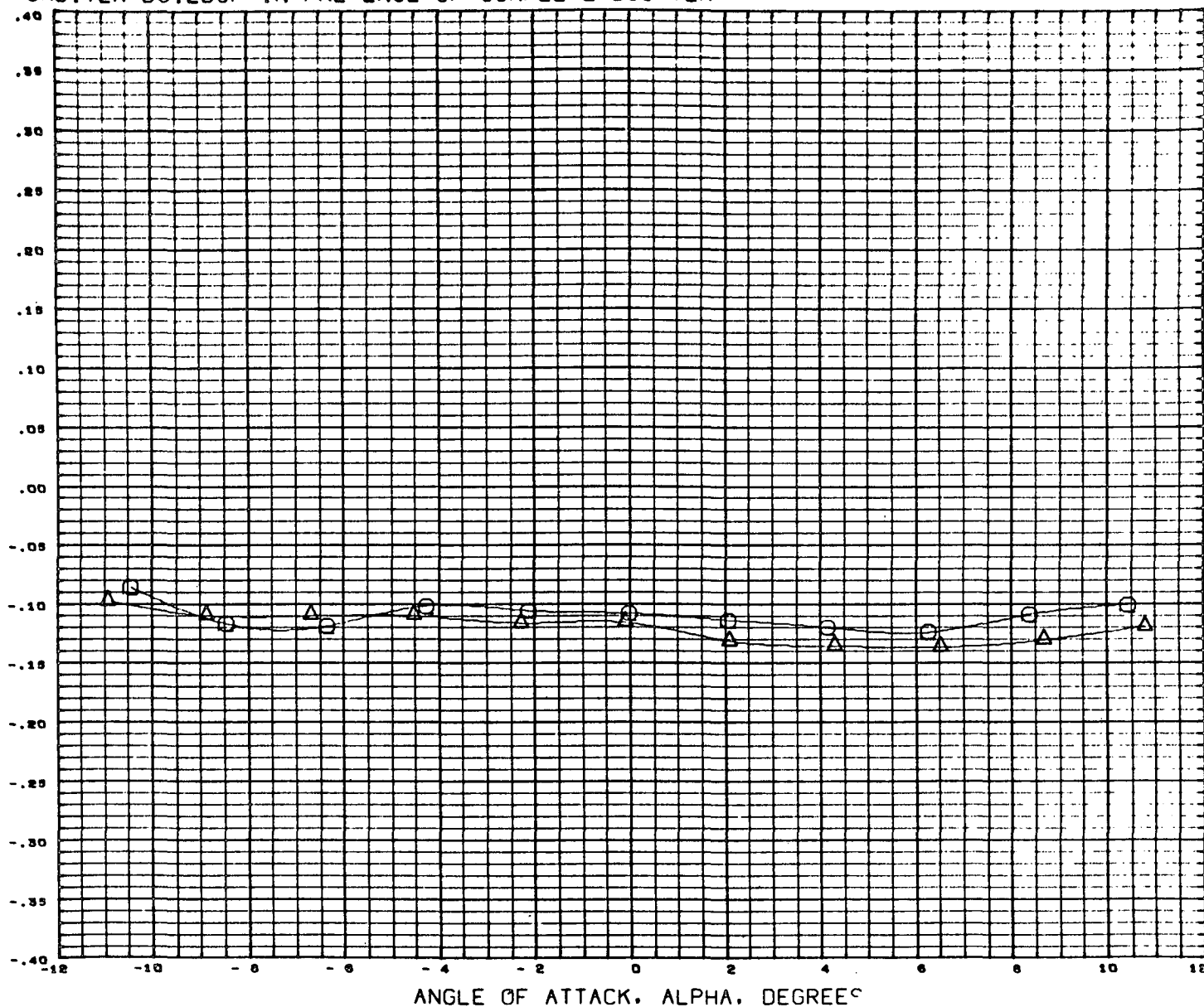
| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6960 SQ IN |
| LREF | 3.0990 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0039 SCALE |

MACH 1.961

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 |
| (03222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

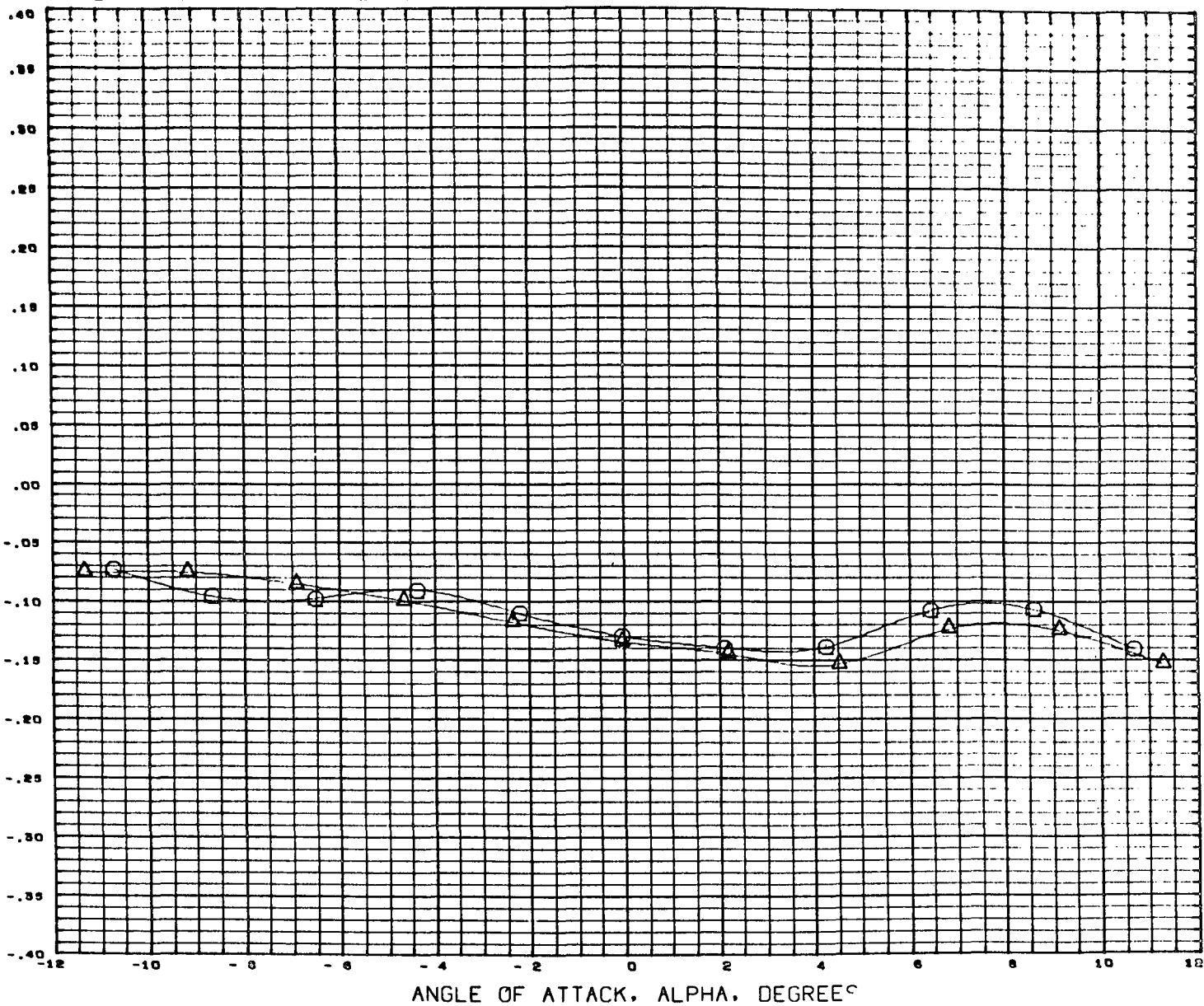
| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | |
|-----------------------|---------------|
| SREF | 15.6560 SQ IN |
| LREF | 3.0950 INCHES |
| BREF | 6.0990 INCHES |
| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0035 SCALE |

MACH 0.001

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE • CLMALP (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

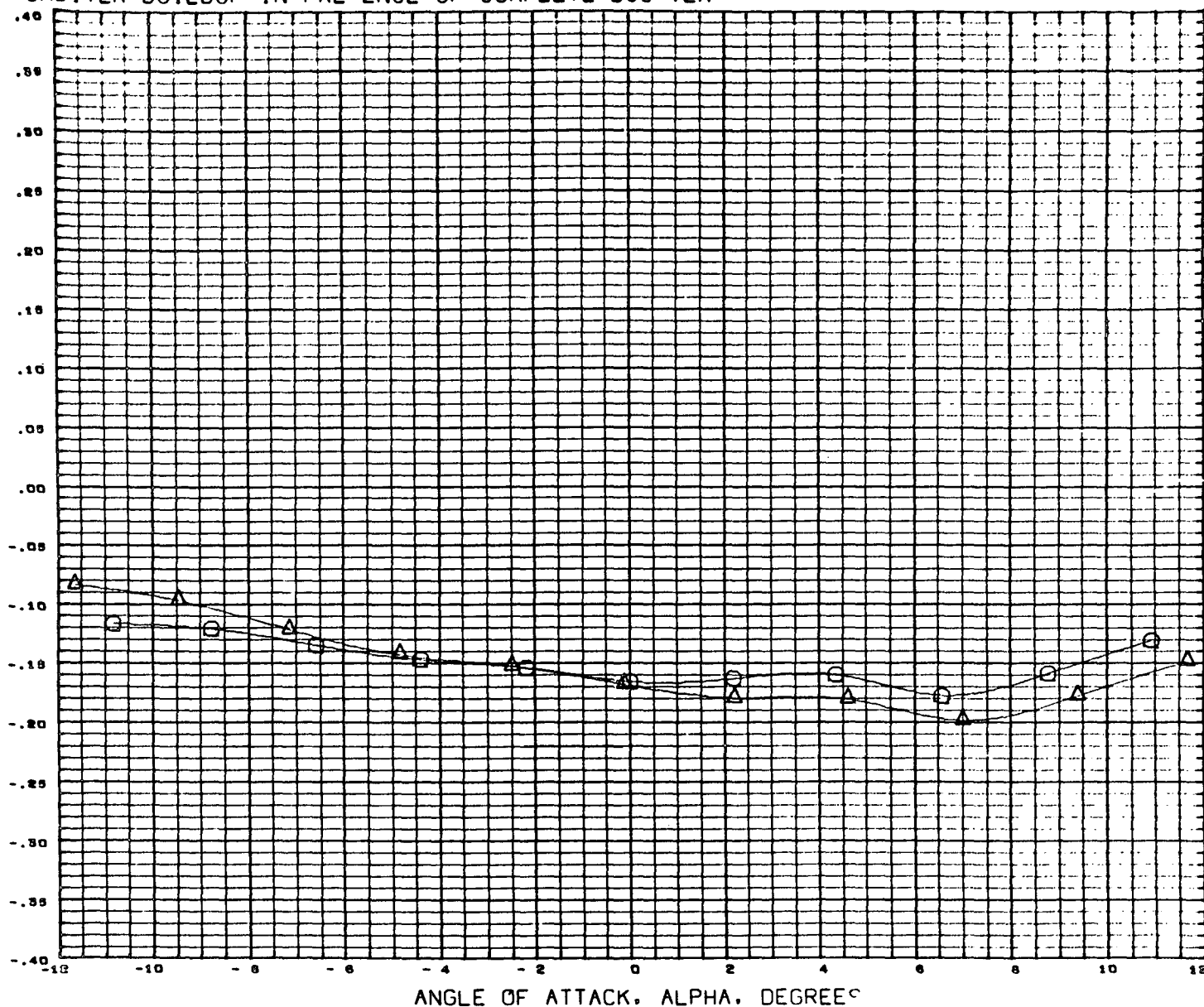


| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (13216A) | MSFC490 NR/GD LAUNCH B20C4BW14V6+85V17 | 0.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (03222A) | MSFC490 NR/GD LAUNCH B20C4BW14V6+85V17V17 | 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.099

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



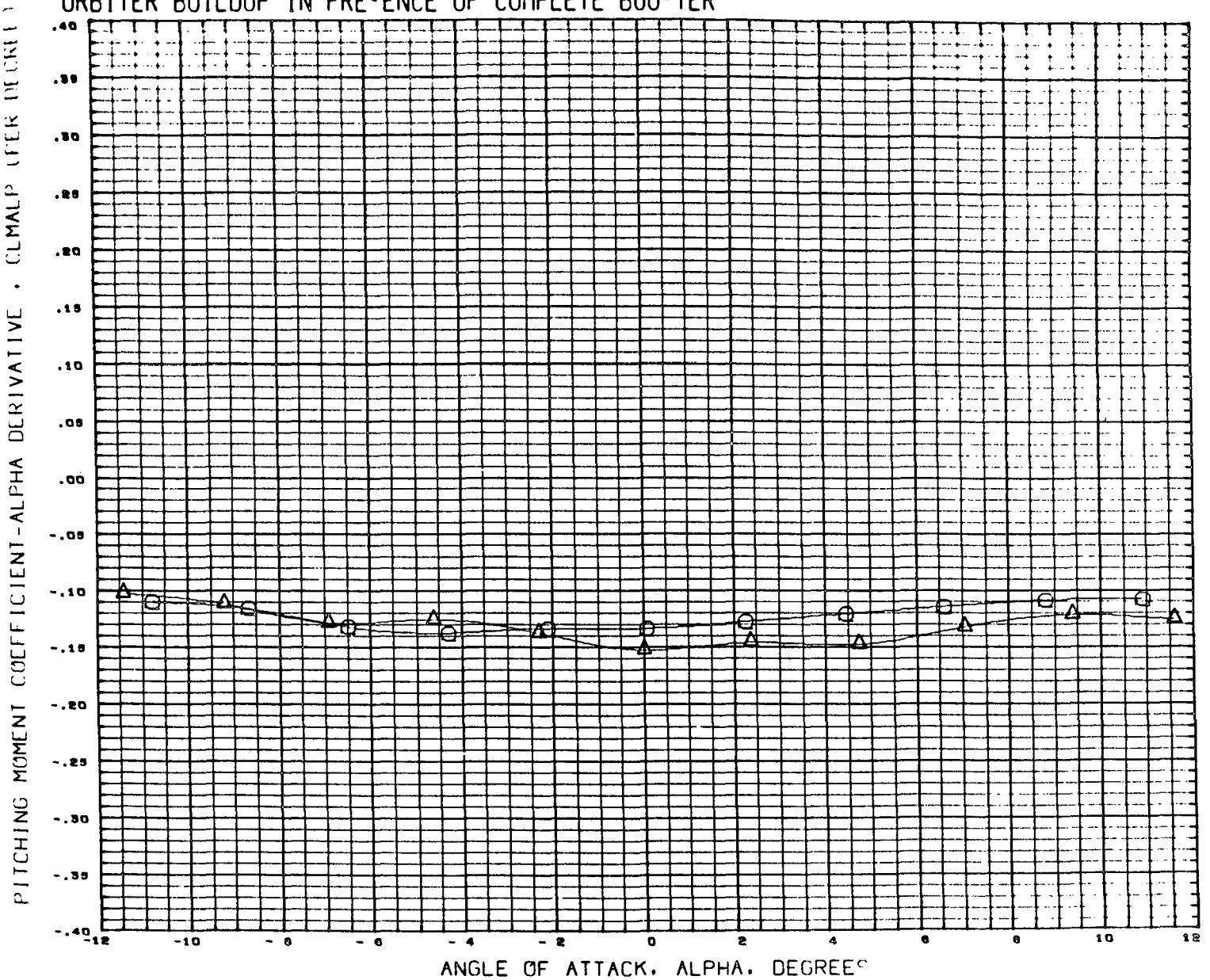
| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 |
| (03222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17V17 |

| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6560 | 50 IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRP | 0.0000 | |
| YMRP | 0.0000 | |
| ZMRP | 0.0000 | |
| SCALE | 0.0035 | SCALE |

MACH 1.097

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (03222A) MSFC490 NR/GD LAUNCH B20C4BW14VR+B5W17V17

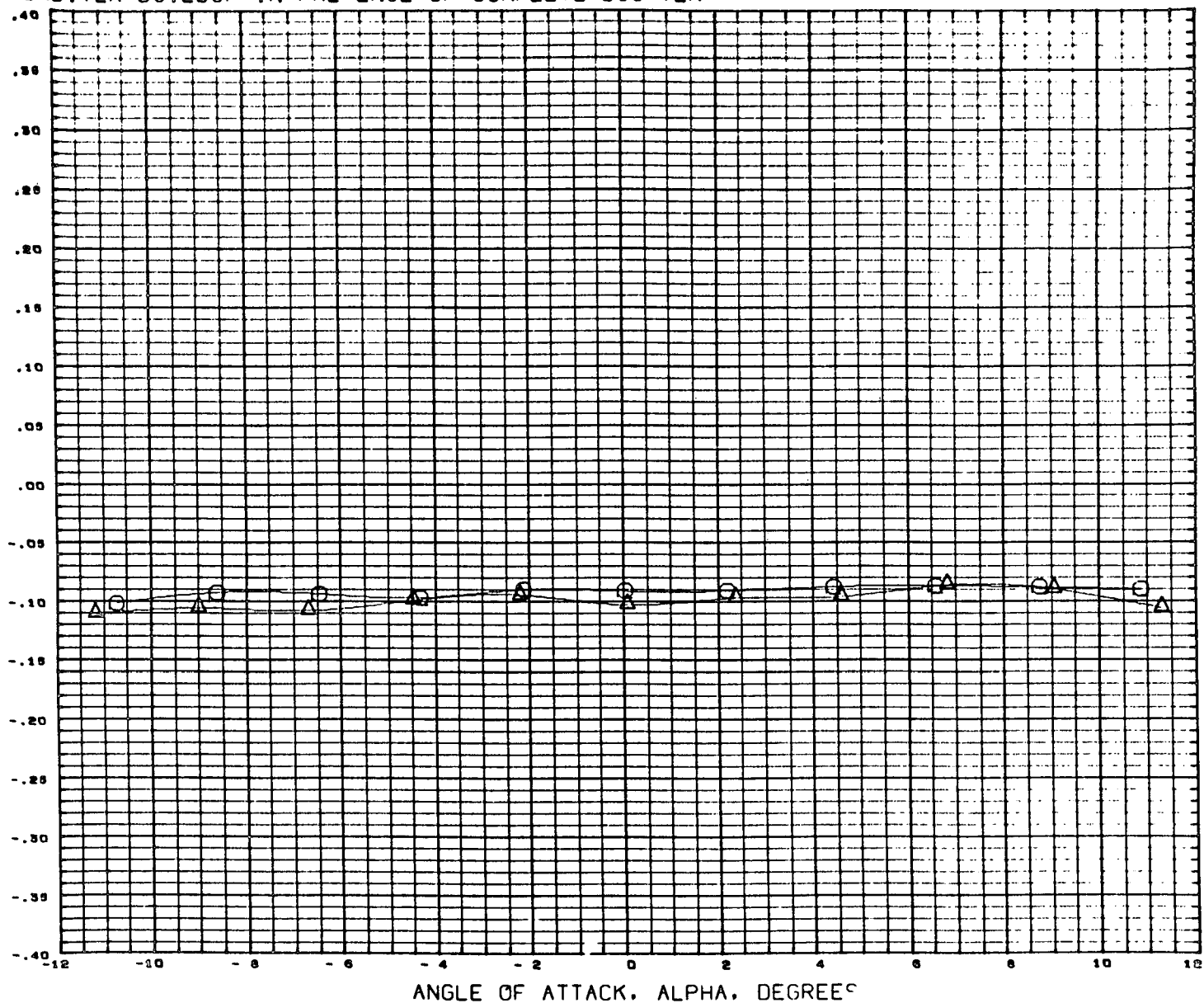
BETA ELVORB RUDORB ELVATR
 0.000 0.000 0.000 0.000
 0.000 0.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6960 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.499

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVORB | RUOORB | ELVATR | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (13216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B3V17 | 0.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (03222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17 | 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0950 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0039 SCALE |

MACH 1.961

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE - UNALPH OVER DERIVATIVE



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13216A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17
 (03222A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

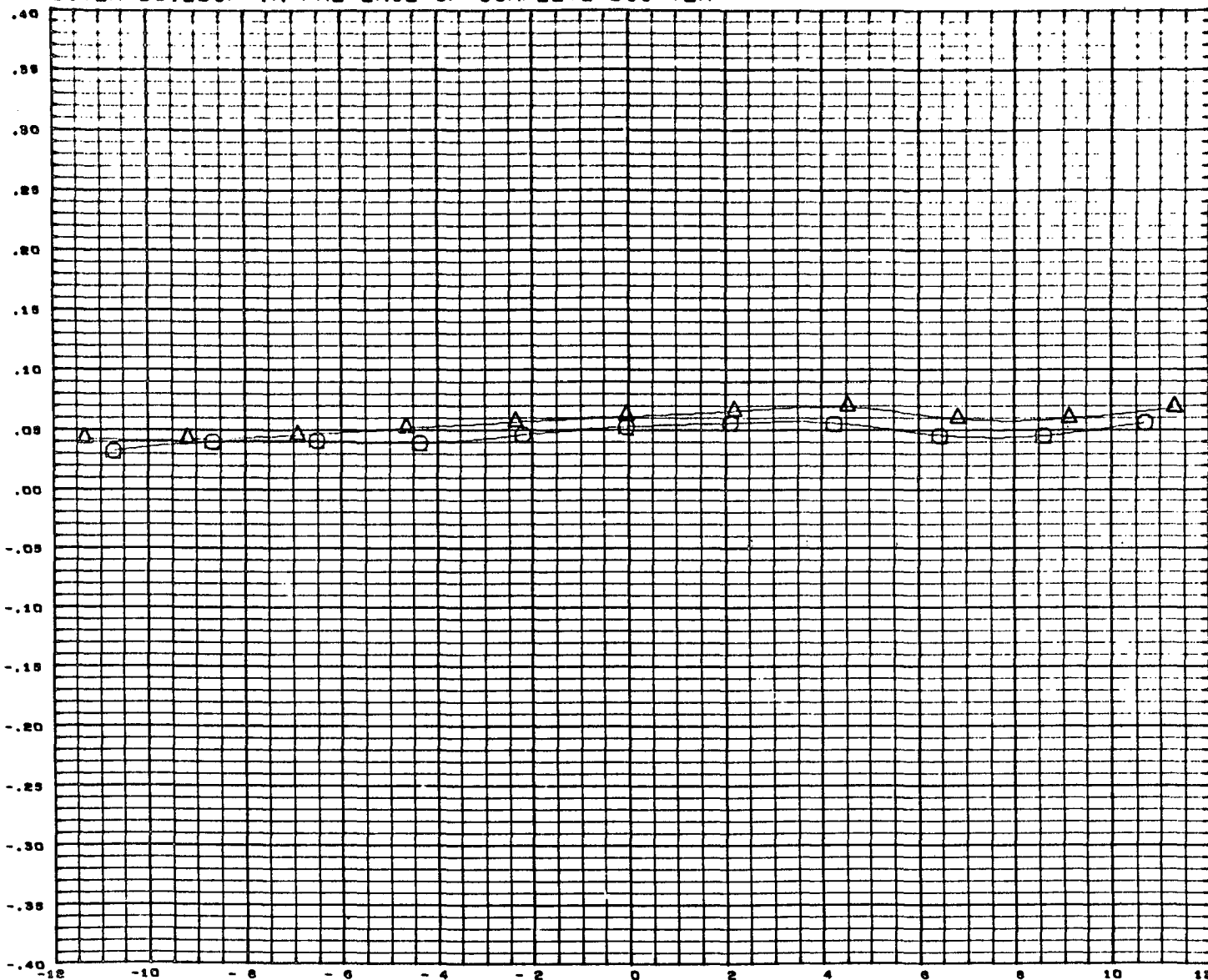
BETA ELVORB RUDORB ELVATR
 0.000 0.000 0.000 0.000
 0.000 0.000 0.000 0.000

REFERENCE INFORMATION
 SREF 19.6960 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 0.601

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREE

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
|-----------------|---|-------|--------|--------|--------|-----------------------|---------------|
| (13216A) | MSPC490 NR/GD LAUNCH B20C4BW14V8+B5V17 | 0.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| (03222A) | MSPC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 | 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0990 INCHES |
| | | | | | | BREF | 6.0990 INCHES |
| | | | | | | XMRP | 0.0000 |
| | | | | | | YMRP | 0.0000 |
| | | | | | | ZMRP | 0.0000 |
| | | | | | | SCALE | 0.0035 SCALE |

MACH 0.899

ORBITER BUILDUP IN PRE[°]ENCE OF COMPLETE BOOSTER



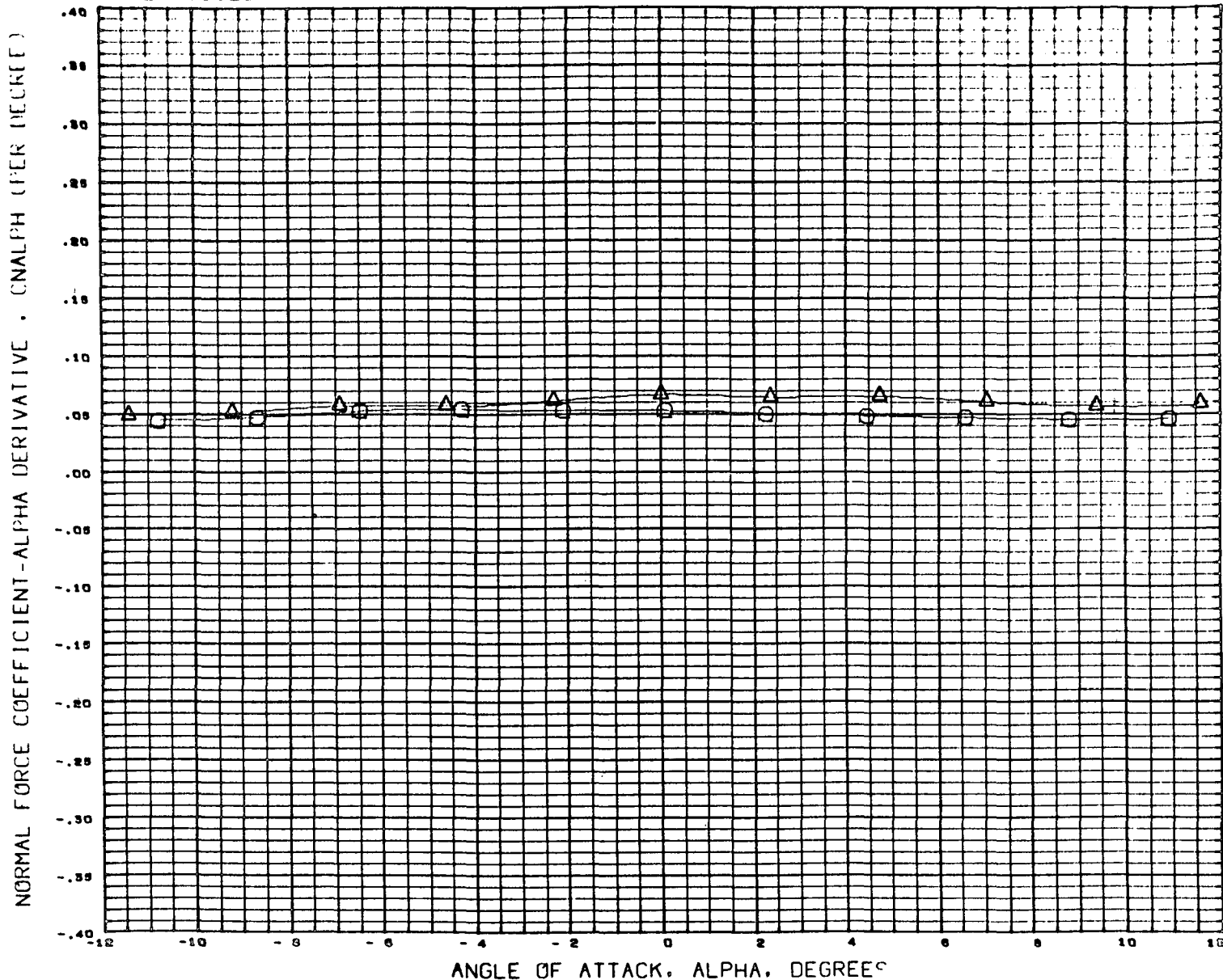
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13216A) M3PC490 NR/GD LAUNCH B20C4BW14V8+B5V17
 (03222A) M3PC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

BETA ELVORB RUDORB ELVATR
 0.000 0.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0039 SCALE

MACH 1.007

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B3V17 |
| (13222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17 |

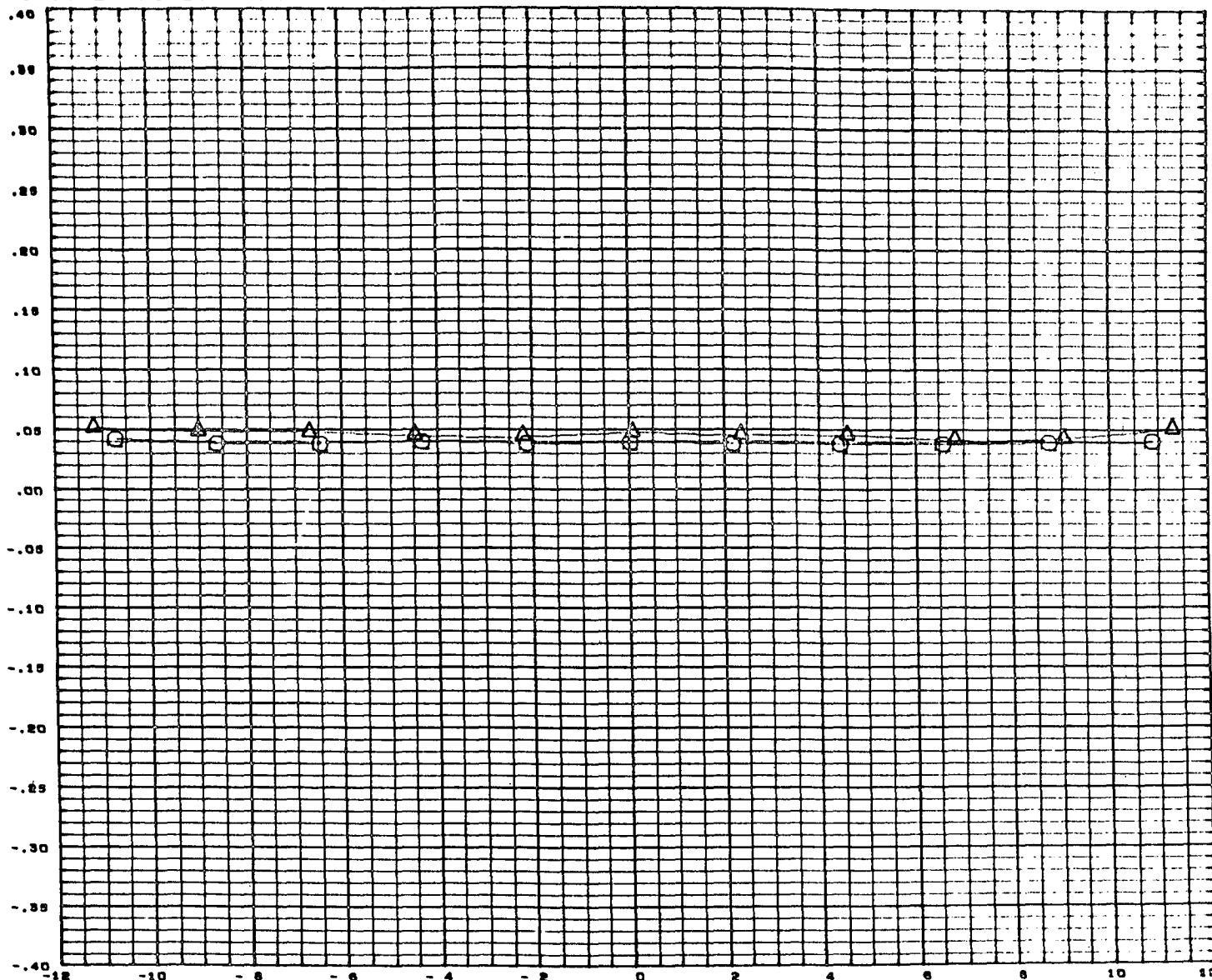
| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 |
| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
|-----------------------|---------|--------|
| SREF | 15.6500 | SQ IN |
| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0039 | SCALE |

MACH 1.499

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

NORMAL FORCE COEFFICIENT-ALPHA DERIVATIVE, CNALPH (PER DEGREE)



ANGLE OF ATTACK, ALPHA, DEGREE°

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (13216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 |
| (05222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

| BETA | ELVORB | RUDORB | ELVATR |
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| 0.000 | 0.000 | 0.000 | 0.000 |

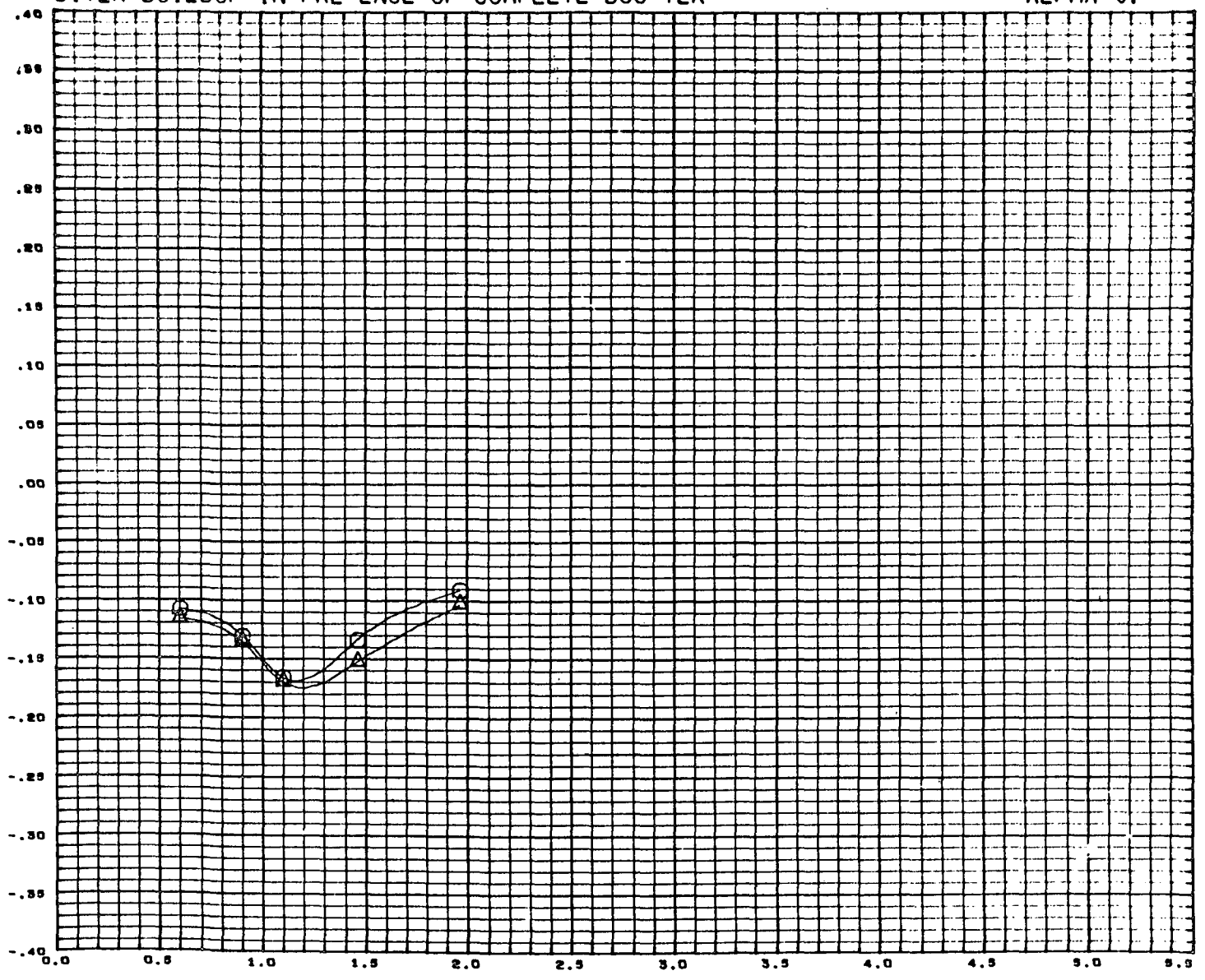
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| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0033 | SCALE |

MACH 1.961

PITCHING MOMENT COEFFICIENT-ALPHA DERIVATIVE - CLMALP (PER DEGREE)

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (J3218A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B3V17 |
| (J3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17V17 |

MACH NUMBER

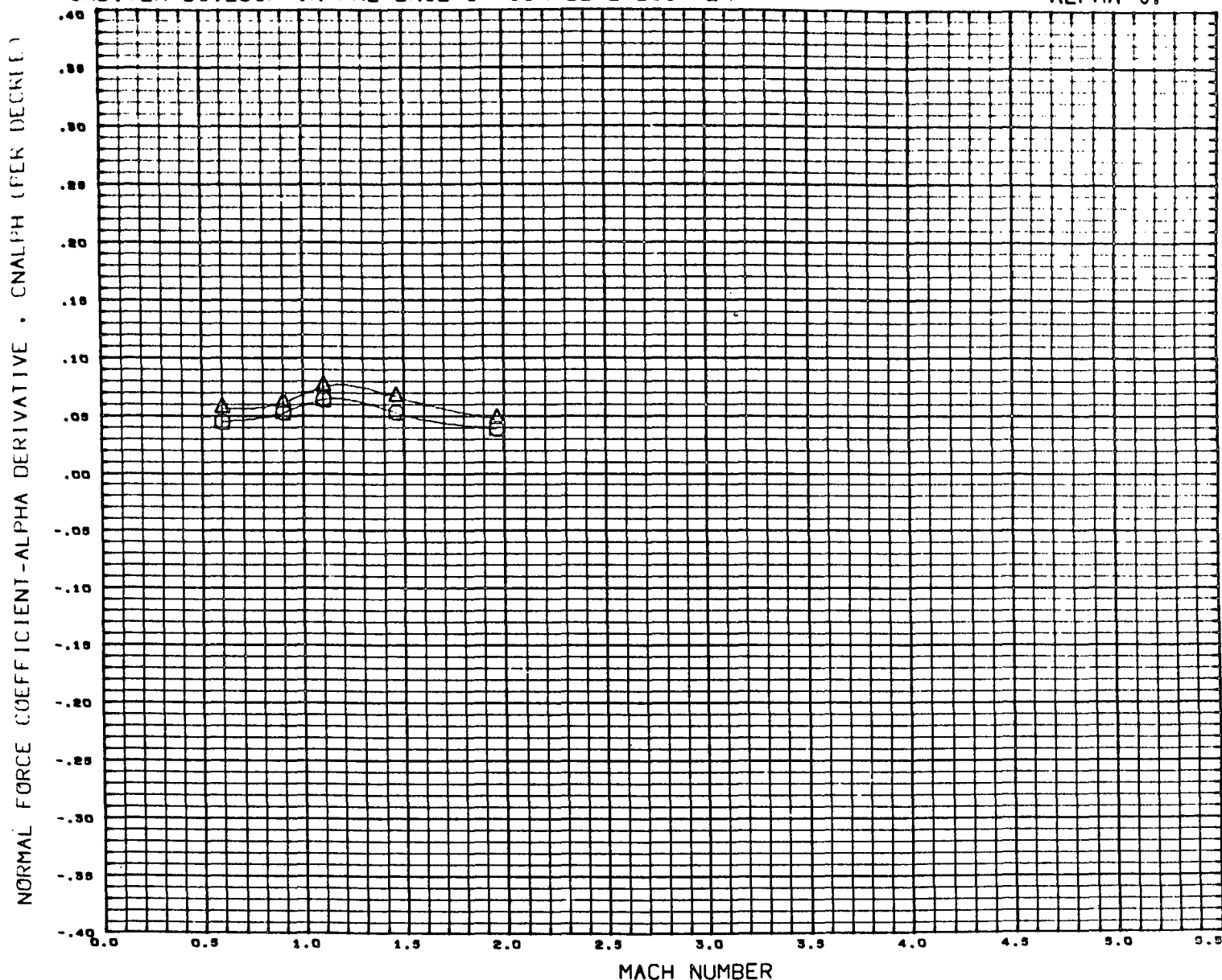
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| 0.000 | 0.000 | 0.000 | 0.000 |

| REFERENCE INFORMATION | | |
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| LREF | 3.0950 | INCHES |
| BREF | 6.0990 | INCHES |
| XMRF | 0.0000 | |
| YMRF | 0.0000 | |
| ZMRF | 0.0000 | |
| SCALE | 0.0035 | SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

ALPHA=0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (J3222A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

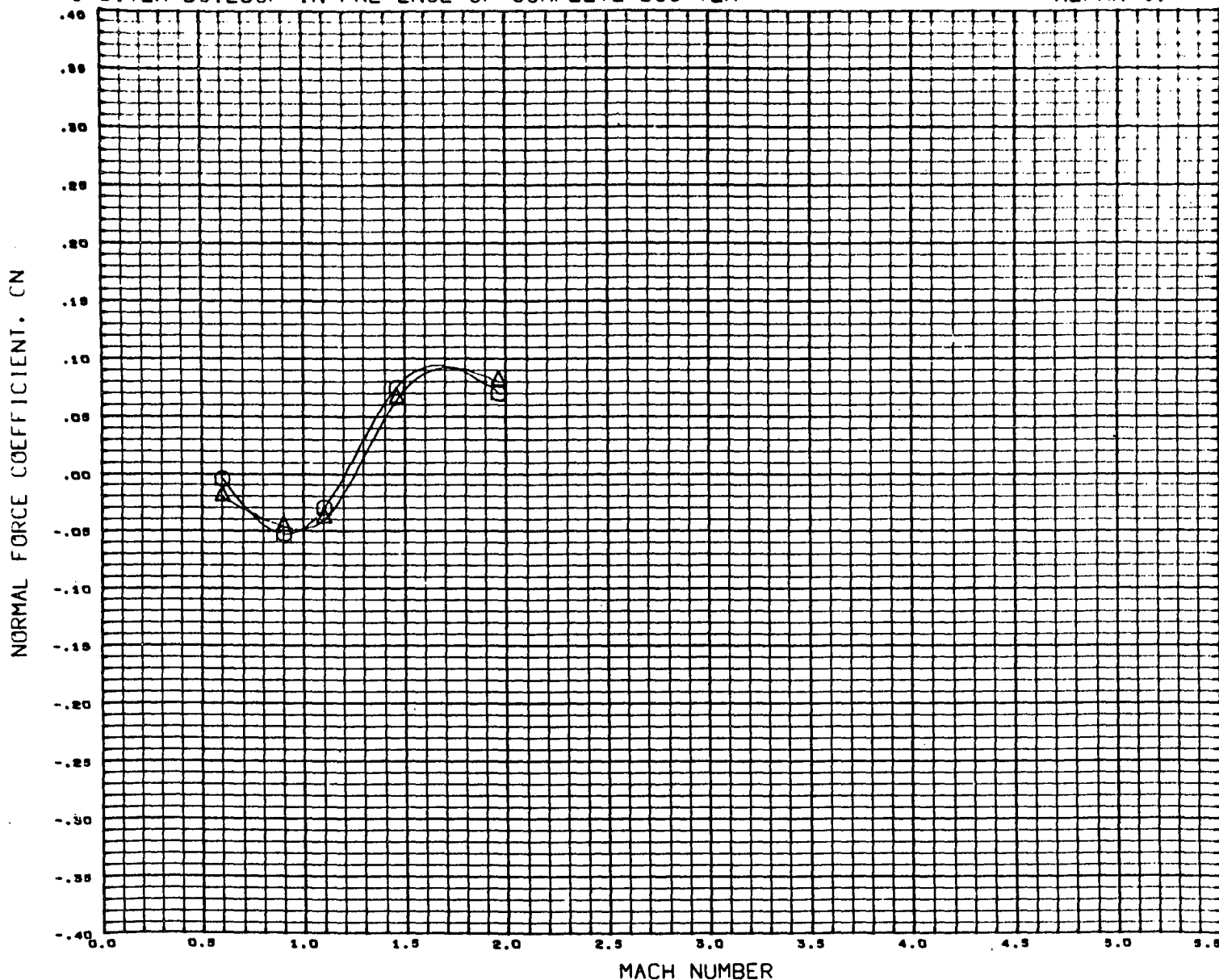
BETA ELVORB RUDORB ELVATR
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REFERENCE INFORMATION
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 LREF 3.0930 INCHES
 BREF 6.0930 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0033 SCALE

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

ALPHA=0.



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (K3216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 |
| (23222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

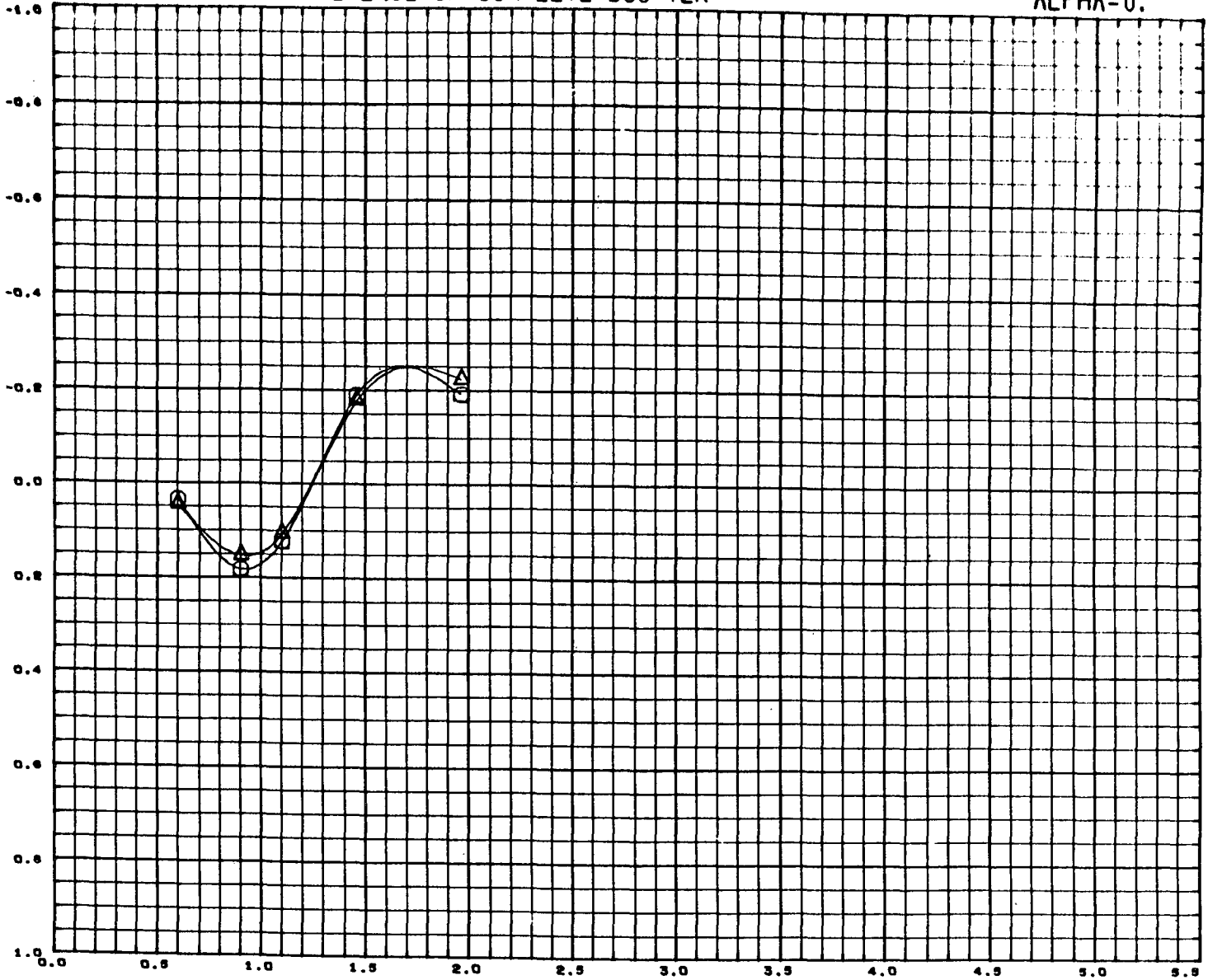
| BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION | |
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| 0.000 | 0.000 | 0.000 | 0.000 | SREF | 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 0.000 | LREF | 3.0930 INCHES |
| | | | | BREF | 6.0990 INCHES |
| | | | | XMRP | 0.0000 |
| | | | | YMRP | 0.0000 |
| | | | | ZMRP | 0.0000 |
| | | | | SCALE | 0.0033 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

ALPHA=0.

PITCHING MOMENT COEFFICIENT, CLM



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3216A) H2FC490 NR/GD LAUNCH B20C4BW14V8+B5V17
 (23222A) H2FC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

| BETA | ELVORB | RUDORB | ELVATR |
|-------|--------|--------|--------|
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| 0.000 | 0.000 | 0.000 | 0.000 |

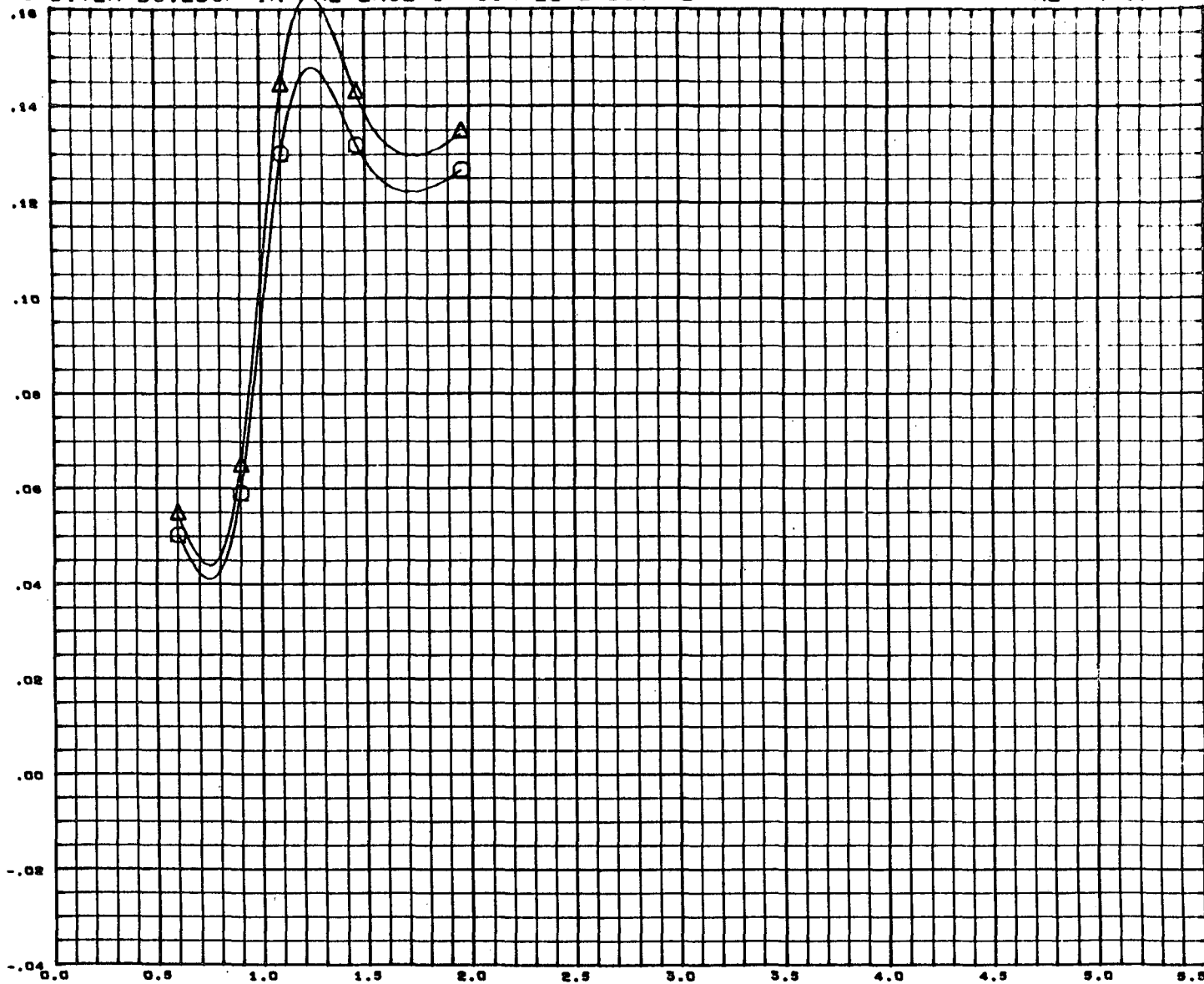
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| XMRP | 0.0000 |
| YMRP | 0.0000 |
| ZMRP | 0.0000 |
| SCALE | 0.0039 SCALE |

ALPHA 0.000

ORBITER BUILDUP IN PRESENCE OF COMPLETE BOOSTER

ALPHA=0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|-----------------|---|
| (K3216A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5V17 |
| (B3222A) | MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17 |

MACH NUMBER

| BETA | ELVORB | RUDORB | ELVATR | REFERENCE INFORMATION |
|-------|--------|--------|--------|-----------------------|
| 0.000 | | 0.000 | 0.000 | SREF 15.6560 SQ IN |
| 0.000 | 0.000 | 0.000 | 0.000 | LREF 3.0930 INCHES |
| | | | | BREF 6.0990 INCHES |
| | | | | XMRP 0.0000 |
| | | | | YMRP 0.0000 |
| | | | | ZMRP 0.0000 |
| | | | | SCALE 0.0033 SCALE |

ALPHA 0.000